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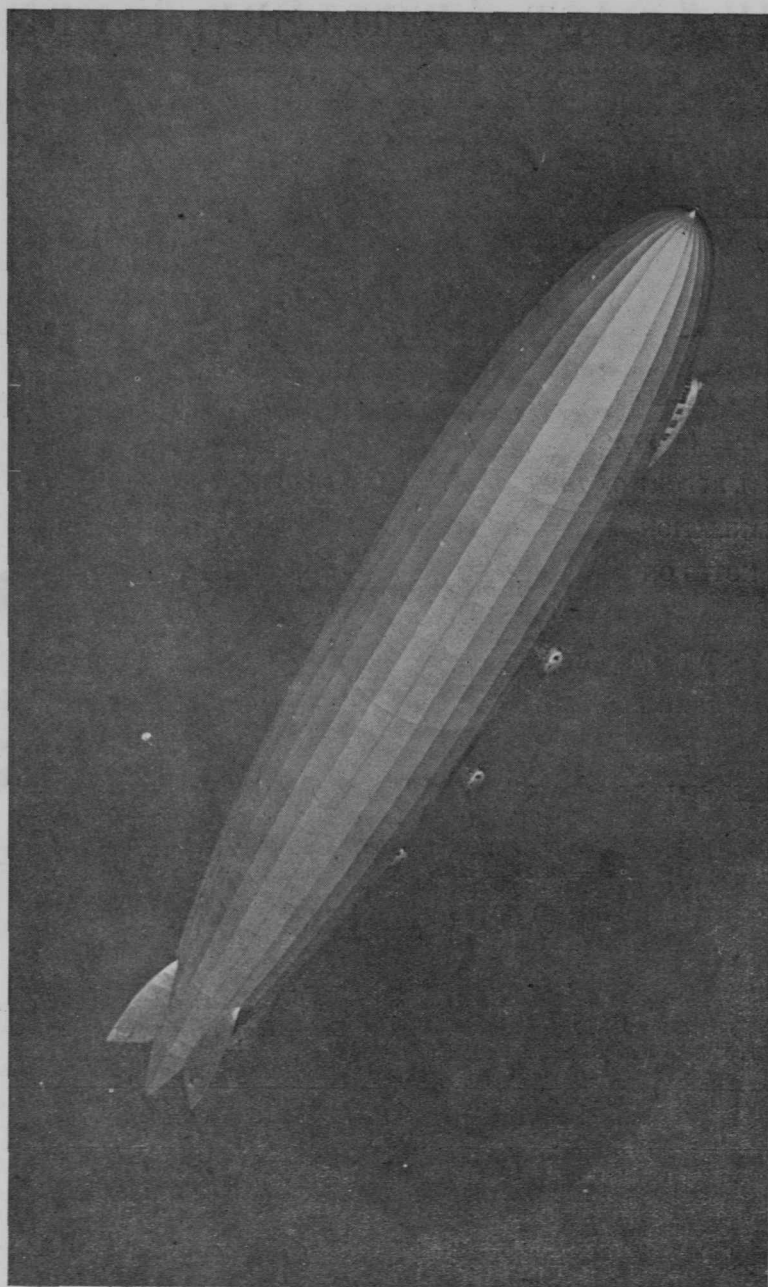
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THE LOS ANGELES

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The Pipes of Peace

By MAJOR SHERMAN MILES, C. A. C.

“OH yes, we are going to do away with war”—the professor settled back in his chair as he added with a twinkle—“and that means getting rid of all you soldiers and sailors and your expensive toys.”

“No more war! No more adventures ‘over there’! Well,” the soldier smiled reminiscently, “it was my job, and perhaps I don’t look back on it with so much regret as you do. For nearly two years we had you out of your laboratories and classes, didn’t we? Your legs harnessed in puttees and a foolish looking cap on your head—hard on you, that! But seriously, old man, just how much of a pacifist are you?”

The professor winced a bit in spite of himself. “Enough to make me sure that you fellows have got to get out. Your day has passed. The future belongs to producers, creators, or at least educators. Get out of the way!”

“Couldn’t you be a little bit more specific about your credo,” asked the soldier? “Most pacifists—”

“Look here! I don’t like that word, and you know it. I am simply a practical man of science, and I happen to know as much of actual war as you do. I hate it. It is the most egregious folly. It can and will be abolished. Why man, look at the world today, the civilized world, I mean. We have cleaned up slavery, dueling, torture of prisoners, all sorts of barbarisms. Can you imagine that we will balk at this super-barbarism, this consummate stupidity which costs us hundreds of millions a year to keep penned up, and then breaks out every so often and rends us to pieces? Nonsense! You cannot stop progress.”

The soldier carefully filled his pipe. “Such a flare up about that pretty word ‘pacifist’! Why should you dislike it? I am thinking of adopting it myself.” The pipe was now satisfactorily packed, and working well. “I am disappointed in you, *mon vieux*. When you dug into that chair I thought we might have one of our good old pow-wows, such as we had in those days when we settled the affairs of the nations after the Armistice. But your stand on peace (I avoid the word you dislike) seems rather thin as a basis for argument. You say you hate war, condemn it as the greatest folly, and believe it can and will be abolished. But so do I. I hate the realities of war, as distinguished from its glamour and its adventure. The nobility of its sacrifices does not, I agree, compensate for its utter waste and brutality. And that it can and will

be abolished I also believe. But when? There is not much use prognosticating on a too distant future. The point is, can war be abolished within the next thirty years, say, or if you like, before the next big exhibition of international folly?"

"There you are," the professor shot back. "That's just where we differ. And its just what I meant by saying that you and your kind would have to get out. You cannot see how rapidly the world moves. You cannot see that you are even now a back number on the verge of an era of peace."

"Perhaps not," the soldier admitted. "Senility is not usually recognized by its victim. But I believe you scientists generally estimate the power of a given body to overcome another by doing a little figuring on relative mass and velocity. With peace and war we are dealing more or less with imponderables, but we can look at the problem on broad lines. War has been with us—how long? It's prehistoric, probably. To be conservative, call it a going concern for sixty centuries. Quite long enough to have made a deep impression on the manner in which men think. Your peace movement, I am told, can be traced back through the last three centuries. But it was hardly recognizable as a force much before 1900. Say thirty years of headway, against six thousand. And only fourteen years ago the Great War cut through European concord like a knife. Now, what advance has world peace made since the Armistice of 1918? You have the League and you have Locarno. Add the Washington Treaties, if you like, and various arbitration and peace pacts. As against the enormous accumulation of war tradition, the inertia of war habits and psychology built up through so long a period, do you really think that world peace has gathered sufficient momentum to win through in your day or mine?"

"You are on the wrong track, soldier-man, the wrong track entirely. The force you should measure, and cannot, is will-to-peace. That is the mass in your problem. Its present velocity is relatively unimportant. What pacifism has actually accomplished, in the mechanism of international control, in the past ten years or in a century is of little consequence compared to the enormous growth in pacific education and will throughout the world. You forget that there is such a thing as potential energy, as well as kinetic. The world today is building up a potential will-to-peace, an enormous head of water impounded and ready to drown your war fires if they ever flare up again. I don't in the least agree with you that the tangible progress of pacifism in the past years has been negligible. But its intangible force is the thing with which you have to reckon. That is the sanction, the strong arm against war. Why, man, the elimination of war is front page news today all over the world. Great bodies of men and women are working for it constantly. The enormous interests of trade and transportation and business of all sorts are practically solid behind it. And so is public opinion. That is why I say your profession is now a detriment to the world. You stand in the way of progress."

The soldier smoked in silence for a moment. "That's a good deal to think about. Of course, the tangible results of pacifism are not negligible. I merely suggested that they are not yet indicative of final and immediate success. As

for your potential force, which you so aptly describe as intangible, I can only say that, since I cannot measure it, neither can you. What use, then, can we make of it to gauge the power of the peace movement as it goes up against this old war force? I dare say your potential will-to-peace may be considerable. But it may also be misleading. It seems to me that I have read of other periods in the past, after great wars—the Napoleonic, for instance—in which war-weariness might easily have been mistaken for will-to-peace, for real reform. And remember that your boy and mine will not visualize war as we do.”

“You soldiers—you never think of force except in its material manifestations, do you? Yet your Napoleon said something about the superiority of moral force over material. War-weariness? Of course we have had it in the past. But never before have we been able to canalize it into actual will-to-peace, to use it educationally. We are doing that now, my friend, and doing it with a vengeance.”

“Well,” the soldier advised, “make the most of it and get something done, if you can, while the world is in a mood for it. And don’t be too sure that America’s desire for peace is the mirror of a world sentiment. So many peoples before us have gathered unto themselves the earth’s bounty and longed only for peace in which to enjoy it! Perhaps in our times, as in the past, the desire for peace may turn out to be much stronger among us, a sleek and prosperous nation, than among some others. In the eyes of the leaner ones I am afraid we appear rather hypocritical. We won our independence in war. We conquered much of our territory in war. We got still more of it, and much of our prosperity, as a result of other peoples’ wars. And now, satiated, we ask only for peace!”

“That is true. But it is also true that you soldiers have made of war such an abomination, even to the victors, that the security of peace has become a world movement to an extent never before even imagined. That is why fifty-five nations have joined the League, with its attendant responsibilities for war suppression. That is why regional agreements involving certain renunciations have been made at Locarno and at Washington. And all this in a decade, in less time than you soldiers have taken to fight some of your wars. What more had you expected of the nations that they might prove their faith?”

“Sacrifice, my altruistic friend, tangible sacrifice,” the soldier replied. “What are the nations willing to pay for peace? Under the present system they pay yearly hundreds of millions of dollars for their armed forces. And those armed forces—the nations, in fact—presumably stand ready to make the greatest sacrifice in war to win an honorable peace. What I am looking for is some commensurate spirit of sacrifice under your new dispensation. What are you willing to give up, what are you willing to pledge for the future? Your intangible, potential will-to-peace—no, that is too ephemereral. What counts is the surrender of freedom of action, of power. And how states, as well as men, do hate to give up power! Measure the amount of self-will and power thrown into the common pool for the sake of peace and you will get a pretty accurate estimate of the advance of your new era.”

"All right, you old materialist," said the professor, "I'll take you on your own ground. Let's start with the League. Perhaps you have not remarked that in that 'common pool' fifty-five nations have limited not only their sovereign right to make war but also their liberty of action should war come. For they have pledged themselves to common action in its suppression. Here is sacrifice, both in renunciation and in promissory notes on the future. Then there is Locarno. A regional agreement that, in which the bitterest enemies of the late war have pooled their interest in peace by paying in their sovereign war-rights and liens on their future freedom of action. And for full measure, since measure you will have, let's come nearer home. Have you forgotten that at Washington our own government voluntarily scrapped considerable of your naval friends' war-tonnage and agreed to stop you soldiers from building provocative forts in a critical area of the world? How do you measure that, you old war horse?"

"The League, Locarno, and Washington," the soldier repeated. "Well, let's give the new internationalism all the credit we can. But let's look it squarely in the face. This League, for instance—in one test of practical value it seems to me to have shown singular weakness. It has not sold itself, as peace insurance, to the very people who most avowedly and unmistakably want peace—our own. In spite of our share in bringing it into existence and the passionate pleas of our then President, we would have none of it. Why? Can you deny that fundamentally it was because we would not pledge ourselves to cooperative action, would not give up our freedom of decision? Leaving aside the question whether we were right or wrong, whether the League is good or bad, my point is that the most pacific of nations has constantly refused to buy League insurance at the price of freedom of action. We don't believe in it enough to pay into the common pool that which we must pay if we are to get peace by cooperation."

"That is not a fair criticism, soldier-man. In our idealism we may be the most pacific nation, but there are others who stand in even more practical need of peace. Why should our judgment on the League be the criterion? When we turned it down we were sick of European brawls and suspicious of the League as an instrument of our late allies. We had no faith in that form of cooperation against war. But does that condemn it? You asked for proof of national willingness to make sacrifices for peace. Well, in the League you have it. Fifty-five nations have gone mighty near the limit—far nearer than we have ventured—in condemning war, in discouraging it by threats of concerted action and punishment, and in pledging themselves to use all peaceful means of settlement. Until the League comes under the strain of a great crisis and is either proved or broken, how can you judge its worth? Do you think it fair to assume that, simply because we have not subscribed to them, the League will not or cannot carry out its pledges?"

"On that ground alone, no," the soldier replied. "But it seems to me by no means certain that the League members themselves have much faith in their cooperative willingness to suppress war. They have concluded that disarmament

ment is dependent on national security—which of course it is. Yet the League apparently fails to provide the necessary security, if we may judge from the fact that armaments have not been materially reduced and from the further fact that the Rhineland Pact of Locarno is avowedly a stop gap, to remain in force until such security is provided.”

“But,” the professor reminded him, “the French army was somewhat reduced after Locarno. So you see some measure of security may be had from international pacts. Give the League time. A decade is a short space in which to cure an immemorial evil, as you yourself said. The pledges in the League Covenant for cooperative action in suppressing war mark a long stride forward, even if they are not everywhere taken at their full value. Wait a bit, until the world gets used to a new idea. And remember that the League’s resolution of September, 1927—to say nothing of the recent Pact of Paris—to refrain from all wars of aggression and to employ pacific means of settlement in every case marks an even greater advance. Also the League led to Locarno. It probably means more than five nations should have agreed at Locarno to combine against any one of them which breaks the peace in a specific area than that fifty-five should have undertaken the more general and therefore more indefinite responsibilities of Articles X and XVI of the League Covenant.”

“Locarno—yes,” the soldier agreed. “There we had concrete evidence of national willingness to make sacrifices for peace. There seems to be a loophole in that clause reserving from arbitration disputes ‘belonging to the past’; but, taken in conjunction with the Rhineland Pact and the Guarantee Treaties, I admit there is small chance of war if the written pledges hold. I also see some significance in our own desire to make war difficult—in the Root and Bryan treaties, for instance, and in our recent treaty with France. But what is the measure of our progress? We went in first for limited arbitration—the Root treaties—and agreed to arbitrate all legal questions, specifically excepting certain categories. Then we worked along the line of conciliation in the Bryan treaties, and agreed not to go to war about anything until after an impartial investigation, to be completed within a year. Now we are renewing our treaties of limited arbitration. But—we refused to extend the application of the Root treaties in 1912; we have allowed the appointment of commissions under the conciliation treaties to lapse until today only one of those eighteen treaties is in working order; and arbitration—well, we are not a party to any one of the eighty-two unlimited arbitration treaties now in effect. In the matter of defining what we are willing to arbitrate, we seem to have advanced in about twenty years from the point at which we reserved from arbitration all questions of ‘vital interest, independence or honor’ to reservations of matters which we may consider domestic or involving ‘the Monroe Doctrine or the Covenant of the League’. Whether in practice our progress has been real or only verbal the future alone can show. The French press questioned whether any conceivable dispute would clearly fall to arbitration under our recent treaty. However that may be, the point is that so far we have always made reservations. We have reserved certain questions even from the jurisdiction of the World Court, and as

a result we have not been admitted to membership of that body. There are certain matters, in which others might be interested, which we mean to settle for ourselves. Whether this be right or wrong there is no use blinking the fact that, in the last analysis, it means one of two things: either we get our own way or—war. Unless we ratify the Pact of Paris without reservations, our willingness to renounce war cannot yet be said to be quite whole-hearted.”

“Still,” insisted the professor, “we mean to narrow those reserved questions down, to limit the possible use of you soldiers. And that is progress. At Havana we induced our Latin neighbors to meet us within a year and try to reach a common minimum of non-arbitrable questions. We can then see just how far arbitration can go, just how much we can hedge in the possibilities of war. And please remember that practically our entire progress towards arbitration and conciliation has taken place within the past twenty years. If you want to measure the change in our attitude, compare the ease with which our last arbitration treaty was ratified with the bitter opposition to all foreign co-operation which killed our treaty with Britain in the Senate thirty years ago.”

“Oh, I don’t know about that,” the soldier protested. “Why go back thirty years? Only two years ago, in the Senate resolution on the World Court, we made it very plain indeed that we mean to keep in our own hands those matters which we consider pertain to us and to our chosen policies. Up to 1926, at least, we do not seem to have made any marked swing towards internationalism.”

“Ah,” returned the professor, “but the World Court was set up by the League! Since we are not in the League, our attitude towards the Court is hardly a true index of our stand on international relations. You should take, instead, the Washington Treaties as a fair example of our present willingness to cooperate. I notice, by the way, that you say very little about those interesting documents. Are you perhaps a bit tender on the subject of our military renunciations at Washington?”

“No,” the soldier replied. “Why should I be? It was a move in broad national politics on our part. We gained our political ends—well and good. If you conceive of the Army and Navy as instrumentalities of statecraft, which they are, there is certainly nothing to weep about when they are pared down a bit to gain political ends of the state. In war we must certainly be prepared to suffer loss in order to accomplish the political aims of our country. If we can do it in peace, so much the better.”

“That’s fair enough,” said the professor, “although I am afraid your naval friends would not entirely agree with you as to the ends gained at Washington. It has always seemed to me that the true significance of the Washington Conference lay more in its political agreements than in the much talked of scrapping of ships. I think the Washington and Havana Conferences are indicative of a very real movement on our part to forestall possibilities of war, to reach mutual understandings betimes, and, in conjunction with the Pact of Paris, to renounce war altogether.”

“Perhaps they are,” the soldier admitted. “But how much is renunciation of war, *per se*, worth? Will it hold without some international machinery to

enforce peace? Our recent treaty with France purports to be an 'example' of our 'condemnation of war as an instrument of national policy'. Yet it is hedged about with limitations and provides no method of enforcement. We propose to go much further in renunciation, to forswear war without reservation and with all nations. Can we find in renunciation of war an effective means of reconciling our traditional policy of no-entanglements with our desire to cooperate internationally to secure peace? And if we can, will that method work? As I see it, the Europeans, to whom peace-or-war is a hair trigger proposition and who presumably know more about it than we do, are working along much more positive lines. They are going in for pretty strong sanctions and for arbitration without loopholes. But we Americans, while shying from the responsibilities of cooperative enforcement of peace, put our money (up to the present with certain reservations) on treaty condemnation or 'outlawry' of war. Will it do the trick, do you think?"

"Yes and no. And that is not a professorial dodging of the question, either. If we can get a goodly part of the civilized world to renounce war sincerely, to outlaw it publicly, have you ever thought of the educational lever it would give us? Raise a generation or two on the idea that war is outlawed, and where will you be, soldier-man? Lincoln issued his Emancipation Proclamation as a war measure, as a moral force against the Confederacy. And it justified itself. Now, if the idea of emancipation from slavery could permeate to an appreciable extent into the heads of the cotton-spinners of Lancaster, how much more do you think the idea of emancipation from war might affect the world today, linked together by marvelous and rapidly growing communications? And then, remember this: Like all written laws, treaties ultimately depend for their execution on public opinion. If we can get the mind of the world set on the idea that war is outlawed, we shall need no other sanction to suppress or punish it if it ever crops up. . . . The 'no' comes in on those questions reserved from arbitration. So long as the nations cannot agree in advance to arbitrate or otherwise amicably settle all questions, we cannot really say that war is outlawed. If we will not bind ourselves to arbitrate a question vital to the Monroe Doctrine, for instance, it would be absurd to say that we would not defend it by force, if necessary. For such a proposition, in any case in which an aggressor stood pat on some ground he had already gained, would be equivalent to a renunciation of the Doctrine itself. Rather than do that, we had much better agree to conciliation or arbitration. It will come to that if we really mean to renounce war. There is also a time factor involved in the effectiveness of renunciation of war. I suspect that we may need some method of enforcing peace for a while, until the world gets weaned from the idea of war. There is a large residue of hate and suspicion still about. And, as you said a while ago, one cannot yet see any great amount of peace confidence as evidenced in national reduction of armaments. We have got to tide over a certain period. There the Locarno and Washington Treaties will help. But the idea of outlawry of war ought to have an accumulative effect. Good ideas often have, you know."

"Yes, I suppose they have," said the soldier. "But there is another aspect of this peace problem which seems a bit shaky to me. Doesn't it depend to a large extent on the integrity and worthiness of various governments? I am not thinking so much of deliberate breaches of the peace or repudiations of treaties as of the effect of sheer bad government. Take our last two big wars. Were they not caused by stupidity, or worse, on the part of governments? Spanish misgovernment of Cuba, to say nothing of the sinking of the *Maine*, brought about an intolerable situation. German governmental mishandling of the submarine campaign and their incredibly stupid note to Mexico brought about an impasse equally hopeless for peace. The War of 1812 and the Mexican War came about in much the same way. Perhaps the art of government is improving. But I am wondering if real international peace must wait until the least dependable of governments can be trusted never to make an intolerable nuisance of itself. If peace must wait on that day, is it not likely to wait a long time?"

"The answer to that, I think," replied the professor, "is the growing habit of conferences and cooperation between nations, the habit of what we know in common-sense American business as 'get-together, give-and-take.' In a world being bound together closer and closer every day by trade and transportation, it is going to be increasingly difficult for any nation not to play the common game. And as the community spirit between nations grows, we shall get rid of the old idea that the only recourse in an intolerable situation is the egotistical method of war."

"That is probably true," the soldier admitted, "but I was not thinking so much of the means by which various governments may be made safe for peace as of the necessity for doing so,—as well as for building up international peace machinery. Since peace is an international chain of which the nations are links, the weakest link involved in any given strain is the one which must be up to standard. During the period in which you are fitting your chain of nations to some workable mechanism of peace, and also tempering your weak links to bear the constant strain of good government—two distinct tasks—I suppose we soldiers and sailors will be expected to furnish such security from war as may be possible?"

"Yes, but how much is that?" demanded the professor. "You say you armed men are instrumentalities of statecraft. In this modern world statecraft will probably continue to desire peace—I am speaking generally of the civilized world, not of exceptions. Can you do the trick—can you maintain peace?"

"Well, I give you back your own answer—yes and no," replied the soldier. "Peace by armed force means some form of balance of power. There may be two opposing alliances, as there were in Europe before the war, or there may be several groups and a few strong powers playing lone hands, as there are today. But in any given crisis it is a question of balance of interest and power. From the point of view of peace, it is a question of time. Your balances may be sufficiently stable for many years; but since the factors which enter into them are very complicated and are constantly changing, growing relatively

stronger or weaker as the various nations progress, obviously the time will come when the scales do not balance. The long strain of waiting for that moment may add greatly to the disruptive effect of an incident. Nineteen-fourteen proved that to the hilt. A shot in an obscure Balkan town upsetting the world! And while suspicion holds, look out for 'preventive' wars—wars to prevent the other fellow making war when he gets strong enough. Also, while hate is with us look out for wars of revenge. There is still a lot of both explosives lying about."

"That's frank, at any rate, and much the way I should size it up myself. But you are an American soldier, and America means to keep out of the balance of power and competitive armaments and all that sort of thing. How do you look on your own job? What sort of a peace-insurance for this country are you, anyway?"

"Pretty good, I should think," the soldier replied, "until your millennium comes into its own. But first get this straight—we soldiers and sailors do not decide on whether there shall be war, ever. Statesmen do that. And the other fellow's statesmen may force the issue, as they did in 1917. Very well. Since our statesmen are presumably pacific, since our people sincerely renounce aggression, what are our military forces but instrumentalities of peace? We make it difficult or dangerous for the other fellow to attack us—that, and nothing more. So I may in reality call myself a pacifist,—a practicing, professional pacifist, my worthy idealist, and I don't wince at the word either! . . . But you asked how much we are worth as peace insurance. About as much as you make us, I should say. As much as the sincerity of your desire for peace is worth, and the power you put in our hands to prevent foreign aggression. Since you like equations, put it down that your peace insurance equals your will-to-peace multiplied by your military force. That's simple. But don't deceive yourself into thinking that America is out of the range of the balance of power. That complication is not European, but world wide. National interests interlock and clash all over the map. And, as we grow as a producing and exporting nation, we are bound to get into it deeper and deeper. We are going to find that will-to-peace is not as simple as it sounds. National interests far beyond our frontiers will sometimes have to be compromised or even sacrificed if we are determined to maintain peace."

"Well," said the professor, "I withdraw what I said about America being out of the orbit of the balance of power, since you extend it to the world's ends. But I don't know about that equation of yours. I am afraid it's not quite right. 'Peace insurance equals will-to-peace times military force.' Um! Then if we should reduce our military force to zero, by your equation our peace insurance would also vanish to nothing, however strong might be our will-to-peace. In other words, you think our chances of peace depend directly on our military force?"

"Yes," the soldier agreed, "as well as on your will-to-peace. Don't forget that. Let that vanish, or sink your fleet and disband your army, and in either case your insurance against war goes glimmering."

"All right," conceded the professor. "But look at it in another way. Suppose we double our military force. By your equation we thereby double our insurance against war. That's nonsense! Double the American Navy, to say nothing of the Army, and see what happens. Talk about shattering the balance of power! Why man, you would raise such a crop of suspicion, such a race in armaments that only by a miracle could we avoid war in the long run."

"Ah—I might have known that it was dangerous to feed a professor equation!" said the soldier regretfully. "But don't you see that military force must always be relative to the task you want it to accomplish? What I meant, in my simplified formula, was military force considered in terms of its ability to prevent foreign aggression. That is the main purpose for which the United States keeps her armed forces. If we doubled our strength, and if that brought about a race in armaments in which possible antagonists approximately doubled theirs, we would be just where we were when we started. The value of our peace insurance would not have been changed, since we had changed neither our will-to-peace nor our military power to prevent aggression. I admit you can exaggerate dependency on military force to the danger point. But you can also get into trouble by being supinely pacific. Do you remember Kinglake's remark about Lord Aberdeen, the British Premier who got his country into the Crimean mess—'He drew down war by suffering himself to have an undue horror of it'? My little equation was only intended to express the generalization that you cannot secure peace by pacific intentions alone, any more than you can by military force alone. Peace is their product."

"That sounds all right," the professor admitted. "The olive branch grafted onto the big stick! But let's look at this military force of yours in the light of its ability to prevent foreign aggression. The trouble with you soldiers and sailors is that, while you talk defense, you always ask for offensive weapons. Just how defensive is this force with which you propose to discourage anyone who might have hostile inclinations towards us?"

"Look here, Bill. That boy of yours is somewhat pugilistically inclined, isn't he?" asked the soldier.

"My boy? Well, he gets into a scrimmage once in a while, but he is not a fool about it. What of it?"

"You mean," the soldier said, "that he likes to have a sporting chance when he mixes it up with another fellow? A normal lad, in other words. Now, suppose you warn him not to tackle Johnny Jones, and tell him that although Johnny never hits back, he is a wizard on covering up and blocking blows. Your boy would probably say: 'Aw, I can lick that guy.' And he could! No defense is proof against vigorous, sustained attack. But tell him he better lay off Tommy Smith, because Tommy carries a powerful wallop. Which of those two youngsters do you think your boy's youthful pugnacity would be the more likely to respect?"

"I see. Then you military men propose to discourage foreign aggression by being ready to strike rather than to shield. The old theory that the best defense

is a good offense. As a peace proposition that does not altogether commend itself to the layman. It might so easily be stretched too far."

"Yes, of course it can," the soldier agreed. "But let's apply it to our own case here in America. Our real strength lies in our enormous potential power. It is the power we apply daily to commerce and industry. When converted into military force it is far and away the most formidable thing in the world today. And it will continue to be overwhelming as long as we retain our supremacy in wealth and production. But—and here is the point—*it takes time, and lots of it* to convert that potential power from a peace force into a war force. We have got an awful wallop, but we cannot use it unless we can hold off the other fellow for a year or more while we are getting it ready. Much damage can be done in a year, as you know. Now, if we also maintain sufficient military force, in the shape of immediately available men, guns, planes, and ships, to block any possible blows until our full strength is developed, we will be a pretty discouraging proposition. Uncle Sam will be known as the lad who has Johnny's defensive skill plus Tommy's renowned wallop. Not a fellow to tackle offhand!"

"Well, that puts it in a better light. If that's your story, you better stick to it," the professor advised. "It ought to be a fairly good answer to the rather prevalent impression that what you military men really mean by adequate defense is having one more regiment and one more ship than the other fellow. However, I suppose that, in blocking the other fellow's blows while you get your wallop ready, as you put it, you don't necessarily mean to confine yourself to defensive measures only. The fleet and the air forces would not seem to fit into such a picture."

"No," said the soldier emphatically. "We will keep the war off our own territory and trade routes if we can—push it out into the other fellow's and hold it there. War, as you may remember, does not improve the land on which it is fought."

"Yes, I remember," the professor admitted sadly. "If we must have war, let's not fight it on our own soil, as the French had to do. . . . But there are still two counts against you soldiers. The first is that you are so preposterously expensive. Isn't it eighty-three cents out of every tax dollar that we have to pay for you and your wars? Something like that. Since you admit that you cannot be sure of keeping the war clouds away from this fair land, isn't that a rather steep price to pay for your form of insurance?"

"Dear old eighty-three cents," the soldier mused. "How the pacifists do love to get them out and rattle them! As it happens, I have the actual figures on that famous tax dollar with me. I looked them up in government statistics only the other day. What you actually spent, Mr. Tax-payer, on your regular and reserve forces, land, sea and air, in the fiscal year 1927 was \$586,805,403.34. Since the total of the federal receipts for the same year was \$4,812,516,430.10, your military item came to a little over twelve cents on your federal tax dollar. The rest of that well-worn eighty-three cents went for debts contracted when you chose to go to war in the past (regardless of the fact that you were unprepared

for that ordeal); also for your amiable habit of pensioning your war veterans for a fantastic time after the show is over; also for the maintenance of the Panama Canal and for improvements in rivers and harbors, all charged to the much maligned War Department. Now, your motives for going to war in the past, prepared or unprepared, were beyond doubt exemplary. Your paternal care for your ex-service men is most praiseworthy. And I dare say your rivers and harbors need funds. I do not criticise. I merely point out that these things are not chargeable against your future military security."

"Still, eighty-three cents on the dollar for past wars and future security (such as it is) seem a lot to a poorly paid professor."

"Yes," the soldier said, "many worthy pedagogues have been horrified when they compared that eighty-three cents with the two-and-a-half cents spent on education from the same dollar. But it happens to be a federal dollar. And since when has education been a primary function of the federal government? It is not mentioned in the Constitution. It is a local issue. State, municipal, and county taxes cover it. Now, of your various local assessments, only your state tax includes any military expenditures whatever. And your state tax dollar gets cut down only about nine-tenths of a cent (on the average) for military purposes, for the national guard and naval militia."

"You mean, then," the professor suggested, "that the federal budget, in which the military expenses appear as a considerable item, is only a part of the total revenues raised by taxation, direct or indirect?"

"Yes, that's it," said the soldier. "To get the picture as a whole, take the fiscal year 1925, the latest for which all figures, federal, state and municipal, have been compiled. In that year the total revenues of the federal government and of all the states and of all the cities of thirty thousand or more population came to \$8,866,292,684.42. The actual cost in the same year of the army, navy, national guard and naval militia—your total preparedness bill—was \$587,398,739.88. That works out at a little less than six-and-a-half cents on your tax dollar, without counting the small town and county taxes, all of which went for non-military purposes. Quite a different proposition from eighty-three cents on the dollar, isn't it?"

"Ah, but you miss the main point," the professor insisted. "I am not so much concerned with what you soldiers and sailors cost (though that is enough) as with the appalling waste of the present system. You may only cost me six-and-a-half cents on the tax dollar, but so long as wars are possible I and all my descendants must go on paying for you *and* for old wars. And that means a very big drain indeed on my dollar. I grant you that you are not directly responsible for wars. I remember that Secretary Baker, who certainly had reason to know you and who is far from being a militarist, publicly asserted that no record exists of an American soldier or sailor urging his country into war. But wars do come upon us, nevertheless. I believe our average so far is a big one every thirty-three years. And that's what we are sick of—the whole war system, with its stupid barbarity and endless drain even in periods of peace."

"Of course you are," the soldier agreed. "But the point is to devise a new system, and one you are sure will work, before you discard the old. In the meantime there is not much use in your complaining about your bill for the present one, even if it does include an item which you may consider unnecessary—my pay check. . . . But just what did you mean by saying that you acquitted me and my kind of 'direct' responsibility for war? Do you think we exert an indirect influence towards war? Is that your second count against us?"

"Yes," said the professor. "The very existence of armed forces prepared for war exerts an indirect influence toward it. Go back to Homer—he put it clearly enough: 'The view itself of arms incites to their abuse.' You cannot avoid the psychological effect of preparedness for war. It is a tacit admission that the war system exists. It tends constantly to make people think of war as the ultimate means of decision. Take any force you like, build it up and maintain it through the years. There will follow a natural, inevitable tendency to use it. It cannot be held in suspense indefinitely without exerting a great pressure."

"I wonder," the soldier asked, "which is the more dangerous to discuss with a professor, equations or psychology? Personally I should have doubted that our small and scattered army and our rarely seen navy could exert any influence whatever on the mind of this huge and busy nation. I rather thought that we had to be at some pains every now and then to obtain recognition of even our most pressing needs. It might be flattering to our egotism to think that our modest presence in your midst led you subtly to think of using us as a flaming sword. But I am afraid it would be rather a strain on the imagination. 'Who are you shoving?' said the elephant to the flea.' . . . No, I am afraid I cannot agree with you on that blessed word 'psychology,' save in so far as our presence is a sign and symbol that the war system still exists. But there our influence should be counted as good. We are your constant reminders that you need a better system, and have not yet devised it."

"You are that and more, soldier-man. Look at the material interests lined up behind your armies and fleets. Financially and industrially there is big business backing you. Assume if you like that every business man knows that war is an evil thing and an extremely hazardous risk for his house. Yet there are those peace-time contracts for your maintenance. They are fat and tempting. In taking them a man's conscience is soothed by the idea that he is helping to provide legitimate means of national defense. So he helps to keep the ball rolling, and you going. And when war comes—well, of course it isn't his fault, and his obvious duty is to provide still more of the wherewithal."

"Oh, come now," the soldier protested. "Isn't that stretching it a bit too far? Even were the equipment and supply of the army and navy obtained wholly through private industry, which of course is by no means the case, the business interests involved would hardly be a drop in the bucket in this country of ours."

"Ah, but every drop counts when it is in the wrong bucket," the professor insisted. "And how about your influence in schools and colleges, your training units of men and boys, your very extensive summer camps? Can you deny that there you are exerting a war, or at least a force influence (much the same

thing) on youths of a very impressionable age? Take the C. M. T. C. You offer practically any boy a free camp for a month in summer. You give him advantages (in his eyes) no one else can offer—military bands, uniforms, flags, guns, and equipment of all sorts. And then you train him to bear arms. Do you fancy you can do this without leading him to think of war as the natural order of things, and rather fun?”

“My dear man,” protested the soldier. “Must I keep on reminding you that you have not yet taken war out of the natural order of things? We are only ten years away from the greatest of wars. And since that ‘war to end war’ there have been major outbreaks of the old evil in Poland, Morocco, and Anatolia, to say nothing of countless minor affairs—more actual fighting than occurred in the decade after Waterloo. There is no getting around it, war still occurs in ‘the natural order of things’; and if you choose to let your youth remain wholly untrained for it, you take certain obvious and unpleasant risks. The fact is, you scientists, with your great advances in transportation and production, have made of war an affair of the entire manhood of the nation, not alone of its professional soldiers and sailors. Therefore, so long as war exists, your manhood must be prepared, to some extent at least, if you value national security.”

“Well, perhaps a certain amount of preparedness will be necessary until we work up some other security from war,” the professor admitted. “But you stray from the point—the influence of your training on youth. A healthy boy learns to look with tolerance, at least, on any game in which he takes an active part. Give him even a month at the handling of arms, and if he makes any progress at all (which he will), he will be a queer one indeed if in the future he regards with greater aversion ‘that mad game the world so loves to play.’”

“Another professor said that, didn’t he?” remarked the soldier. “But do you really believe that a youth of the C. M. T. C. or R. O. T. C. carries home with him any stronger bent towards war than a tacit understanding that it is still a live issue between nations? Or is this truth alone so baneful?”

“I am afraid he carries away a lot more than that,” said the professor. “When you get an educator of the eminence of John Dewey worked up into believing that you are deliberately trying to militarize this country through the medium of schools and colleges, you should realize that there is something in it.”

“Professor Dewey,” the soldier conceded, “ought to know more about a boy’s reactions than I do. I wonder if he knows as much about our camps and what we give the boy to react upon? Of course we try to teach the rudiments of the military game. But we realize that we can teach only the rudiments; and so we put our real emphasis on character-building, on self-reliance and manliness, on team-play, discipline and patriotism in the sense of good citizenship. I understand that these virtues are in good repute in walks of life other than the military. They should be, for look at the other side of the picture—your wild youngsters, your young gunmen. They get that way, not through training and discipline but because of the lack of them. Also the boy in camp gets quite an insight into matters of personal hygiene. And in rubbing up against his

fellows he perhaps learns more about democracy than he imagines. Again, he is getting something of use to him. To what extent several hours of drill a day will make him bellicose, I don't pretend to know. That they cannot make him a finished soldier is obvious. It is perhaps for that reason, or perhaps because we are really trying to serve the country, that we put our main effort on character-building rather than on soldier-making. And it is certain that his drills do not cut down his zest for sports. I wonder if you realize the time and money we spend in providing athletics for those camps, the care with which they are supervised, and the effort we make to insure that each boy gets his full chance? I may be entirely wrong, but what I have seen of the camps leads me to believe that a boy is likely to take away with him much the same impression he would get from any of the thousands of well-run civilian camps. I suspect that his outstanding impressions are of a month of vigorous exercise in the open, of companionship and keen competition with his fellows, of satisfaction in having felt himself part of a team, of having learned to obey and perhaps also to give orders, of some hard work, and of some of the fun of youth. For this he has paid, not in money as in a civilian camp, but in service. Whether he carries away with him the virus of war, as you and Professor Dewey seem to think, is open to doubt. But of this I am sure—he is a better citizen. He is a better citizen because he knows that in a measure he has served the state. He is at least not wholly unprepared to render that most crucial service which his citizenship may some day demand. Against this gain, and against all the health—mental, moral and physical—which we can and do give him, you set the vague fear that in handling arms he may have developed a desire to use them! Well, my friend, I can only say that you have a much lower opinion of the soundness of American youth than I have.”

“Your flank movements around the main issue may be good tactics, my soldier-friend, but they are unconvincing. Youth is of the essence of the problem, since we must train the next generation or two to think in terms of peace and not of war. Preparedness for war is of course your job. What you cannot see is peace preparedness. That means not only will-to-peace, but also a public mind prepared to accept a peaceful settlement of any conceivable crisis, and to reject the idea of war wholly and without question. Wars, as you know, are commonly made by minorities. The great mass of people accept them because they have been trained through untold generations to regard them as the normal means of meeting national crises, of preserving national honor, etc. That war-mentality we must replace by peace-mentality. And that means the training of youth to peace, not to war. I dare say your training camps produce many worth while by-products in the form of sports, hygiene, etc. But it is not by-products I am talking about. It is the essence of the thing—the reaction of this coming generation to war.”

“Yes,” said the soldier gleefully, “and as a final *reductio ad absurdum* in your attempt to teach the young to think as you want them to think, I understand that it is proposed to take away the kids’ tin soldiers and pop guns and banish *Paul Revere’s Ride* and *The Man Without a Country* from their book

shelves. How Mars must laugh! Before you have solved your own man-sized problems, before you have even codified the laws of your international life, you piddle with children's toys and boys' camps. It's funny—and fatuous! You are up against the hardest proposition collective man has ever tackled. You know perfectly well that you have by no means reached a sound and sure solution. You know that our government, the elective head of the most peace loving people in the world, is not now and never has been convinced that the era of wars is over. You know that we are now building up our Navy, having recently failed to reach an agreement to limit shipbuilding on the relatively minor point of cruisers. You know that we have turned down the one outstanding international organization for the suppression of war. You know that we still consider ourselves bound by the Monroe Doctrine to protect practically this entire hemisphere from any attempt at foreign domination. You know that we have made no pledges on the future to submit to any form of international decision any questions which we may choose to consider either as domestic or as pre-empted by us under the Monroe Doctrine. And, knowing all this, you would say to the youth of this country: 'Shut your eyes to the fact of war. Don't think of it. And perpetual peace will come to you or your children!'

"Whew!" exclaimed the professor. "It seems to me that somebody else is flaring up a bit! I don't know that I am advising young men to shut their eyes to facts—it's not considered ethical in my profession. I should rather that they kept their eyes very much open to the trend of the times, and particularly that they should not forget what I think you called the realities of war. I am rather keen that the next generation should carry on towards the goal, and not slip back into our old ways. And I am afraid you are not helping much in that respect."

"Perhaps not," the soldier replied. "My business is national security, not international reform. But the truth is, our generation said we were going to do away with war—and we have not made good. The on-coming generation know this, and when they think about it they are apt to conclude that we made a mess of a great opportunity. I am not sure but that they are right. At any rate they will get their chance to tackle the problem in their day. Perhaps they will do better than we have done. I hope they will. But until their day comes, let us at least be honest with our sons and daughters. Let us at least not pretend that we have accomplished more than we have, nor lull them into a sense of false security. Better, a thousand times, say to them frankly, as we soldiers do in substance say: 'The world is groping towards peace. It may in time attain it. In the meanwhile we carry on under the old system of national security by preparedness. It has its obvious disadvantages. It is the standing proof that the goal has not yet been reached, that humanity has not yet learned to govern itself. But, taking the world as it is, we believe that it offers the only road to reasonable security for our national life'.—And, old man, we wait on you to better it."

Annual Report of the Chief of Coast Artillery

Extracts

1. GENERAL.

a. For the Coast Artillery Corps the outstanding features of the fiscal year 1928 have been:

- (1) Resumption of seacoast artillery battle practices in the United States;
- (2) Improved tactical training incident to concentrations on both east and west coasts;
- (3) A general improvement in artillery technique;
- (4) Standardization of artillery practice methods, including the scoring system, and the preparation of a training regulation covering this subject;
- (5) The adoption of a new system for controlled submarine mines;
- (6) Revision of defensive sea area plans;
- (7) A rapid advance toward standardization of sound-ranging equipment and antiaircraft gun equipment, and hopeful progress toward solving the problem of antiaircraft machine-gun fire at the longer ranges;
- (8) Initiation of studies for the antiaircraft defense of important localities;

* * * * *

(10) An increased strain upon personnel generally to maintain high standards of training and appearance and at the same time to care for the valuable installations in their charge.

Most of the foregoing are discussed in greater detail under appropriate paragraphs below.

b. With the issue of G. O. 22, W. D., 1927, the missions of the Coast Artillery have been logically defined and the embarrassments to instruction and to preparation of training regulations removed. Responsibility for heavy trench mortars has been transferred to the Field Artillery, leaving the Coast Artillery charged only with the development and use of weapons intended for fire on moving targets (naval or air) and of the auxiliaries necessary for control of such fire.

c. During the year reported upon the undersigned witnessed the battle practice at Fort H. G. Wright, N. Y., and has inspected the harbor defenses of the First, Second, Third, Fourth, and Eighth Corps Areas, the 61st and 62d regiments (AA), the 51st Coast Artillery (TD), the 52d Coast Artillery (Ry), and the Coast Artillery School. Incident to these inspections the following Coast Artillery R. O. T. C. units were visited: Georgia School of Technology, The Citadel, Kansas State College, University of Kansas, Washington University, University of Cincinnati, and the Virginia Polytechnic Institute. The Training Camp at Fort Knox, Ky., also was visited. In all fifty-two days were devoted to visits and inspections.

d. Assistants in the Office, Chief of Coast Artillery, attended the battle practices at Fort Story, Virginia, and Fort H. G. Wright, N. Y.

2. PERSONNEL.

a. Regular Army Commissioned Personnel.

(1) On June 30, 1928, the number of officers in the Coast Artillery, including those commissioned in the arm and those detailed for duty with it from other arms, was as follows:

	<i>Cols.</i>	<i>Lt. Cols.</i>	<i>Majs.</i>	<i>Cpts.</i>	<i>1st Lts.</i>	<i>2nd Lts.</i>	<i>Totals</i>
Commissioned in Coast Art'y. . .	58	60	221	280	221	184	1024
Detailed from other arms			3	4	6	3	16
Totals	58	60	224	284	227	187	1040

(2) The distribution of the commissioned personnel of the Coast Artillery on June 30, 1928 (assigned status) was as indicated below:

	<i>Maj. Gen.</i>	<i>Cols.</i>	<i>Lt. Cols.</i>	<i>Majs.</i>	<i>Cpts.</i>	<i>1st Lts.</i>	<i>2nd Lts.</i>	<i>Totals</i>	<i>Authorized</i>
Total No. of officers on									
Br. Duty	(1)	(28)	(18)	(114)	(229)	(173)	(146)	(709)	(715)
With C. A. Units . .	1	28	18	101	188	149	142	627	635
Special Serv. Schools				13	41	24	4	82	80
Detached Duty		(28)	(36)	(104)	(46)	(50)	(2)	(226)	285
Detailed in G. S. C.		6	12	15				33	
Military Attaches		2	1					3	
Army War College									
(Staff)		1	1	1				3	
Army War College									
(Students)			1	8				9	
C. & G. S. School									
(Staff)		1	2	5		1		9	
C. & G. S. School									
(Students)			1	18	6			25	
National Guard . . .		1	4	14	9	10		38	
Organized Reserves		12	8	13	4	1		38	
R. O. T. C.		4	1	21	17	11		54	
Inland Waterways									
Corp.		1						1	
Recruiting			1		3	6		10	
U. S. M. A.			1	5	3	12	1	22	
Misc. Details			3	4	4	9	1	21	
Detailed with Other									
Branches		(1)	(3)	(3)	(7)	(10)	(10)	(34)	
I. G. D.		1	3	2				6	
Ordnance Dept. . . .					2	4	6	12	
Signal Corps						3		3	
Air Corps						1	4	5	
Chemical Warfare									
Service					3			3	
Quartermaster									
Corps.					2	2		4	
Quartermaster									
General's Dept.				1				1	
	1	57	57	221	282	233	158	1009	1000

(3) The following table shows the progress made in passing officers through the service schools:

	<i>Field Officers</i>	<i>Cpts.</i>	<i>Cpts.</i>	<i>1st Lts.</i>	<i>2nd Lts.</i>	<i>Total</i>
Army War College—Grad.	72					72
C. & G. S. S.—Grad.	208	9				217
Adv. Cr., C. A. S.	211	17				228
* Eligibles to attend (next 5 yrs)	44	116				160
B. O. Cr., Grad.			198	112	2	312
** Eligibles to attend			75	111	185	371

* Includes all majors who have not had the course, one lieutenant colonel, and all captains to be promoted within next 10 years.

** Includes all battery officers who have not had B. O. Course, except 7 captains who have graduated from Command and General Staff School, 3 captains who have been excused, and 2 lieutenants who are too old.

Under the present policies it is expected that for the next few years the Advanced Class, Coast Artillery School, will be composed of about 22 students, the Battery Officers' Class, about 56, the Command and General Staff School about 16 (16 entering each year) and the Army War College about 9.

(4) In the assignment of officers every effort has been made to reduce to a minimum the number of moves. The success of these efforts has been marked and it is the exception when an officer is moved before he has served at least two years on any one assignment.

(5) Seventeen per cent of the field officers and thirty-two per cent of the battery officers commissioned in the Coast Artillery Corps are on foreign service.

(6) It has been impossible to keep the assignments of commissioned personnel to organizations and harbor defenses up to strength due to the number of officers detailed to duty other than branch duty. At the present time there is a shortage of 13 officers for assignment to Coast Artillery units. The maximum number short for duty with organizations at any time during the year was 23; this occurred just prior to the assignment of the graduating class of the United States Military Academy.

b. Reserve Officers, Coast Artillery.

(1) Distribution of Coast Artillery Reserve Officers, June 30, 1928:

<i>Group</i>	<i>CORPS AREA</i>									<i>Pan. Dept.</i>	<i>Haw. Dept.</i>	<i>Phil. Dept.</i>	<i>Total</i>
	<i>1st</i>	<i>2nd</i>	<i>3rd</i>	<i>4th</i>	<i>5th</i>	<i>6th</i>	<i>7th</i>	<i>8th</i>	<i>9th</i>				
G. A. Group . .		1	1	1	1								4
B. A. Group . .													
Authorized . .													402
Available . .	15	21	48	110	12	28	6	57	6	2	4	3	312
* Unassigned . .													25
T. A. Group . .													
Authorized . .	436	487	589	243	193	94	133	33	529				2737
** Available . .	517	562	660	612	221	395	453	119	526	2	22	6	4095

* Ineligible for assignment and residing abroad.

** Does not include National Guard officers holding Reserve commissions.

About .05% are in the grade of colonel; 1% in the grade of lieutenant colonel; 4% in the grade of major; or a total of 5.05% in the field grades.

(2) Reserve Officers, B. A. Group by grades, trained during the fiscal year ending June 30, 1928:

	15 Days	More than 15 Days
Second Lieutenants	15	1
First Lieutenants	9	1
Captains	9	
Majors	3	
Lieut. Colonels	2	
Totals	38	2

Of this number the following have received active duty training during each of the three fiscal years, 1926, 1927, and 1928:

<i>Lt. Col.</i> 1	<i>Major</i> 2	<i>Captain</i> 4	<i>1st Lt.</i> 2	<i>2nd Lt.</i> 1	<i>Total</i> 10
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c. Distribution of Enlisted Men.

	U. S.	Pan.	Haw.	Philippines		At Sea	Total
				Am.	Phil. Scouts		
Present authorized strength (G. O. 7, 1926)	5314	2253	3000	1200			11,767
Authorized G. O. 30, 1924 ..					2400		2400
Total Authorized ...							14,167
Actual strength, American May 31, 1928	5495	2085	2842	1206		40	11,668
Actual strength, Phil. Scouts April 30, 1928					1531		1531
Total April 30, 1928 ..							13,199

d. The enlisted strength of the Coast Artillery Corps (not including Philippine Scouts) actually on duty with units of the arm has been reduced from 25,606 to 11,668 since 1921. The change in authorized grades and ratings during the same period is shown in the following tables:

GRADES

	Master Sgts.	Tech. & 1st Sgts.	Staff Sgts.	Sgts.	Corps.	Pvts. 1st Cl.
1920—Bul. 25 ...	215	498	576	2673	3184	7381
1928—G. O. 7, '26 ..	93	225	341	998	1200	2999
Loss	182	273	235	1675	1984	4382

RATINGS

	1st Cl.	2d Cl.	3d Cl.	4th Cl.	5th Cl.	6th Cl.
1920—Bul. 25 ...	44	115	385	686	1011	2137
1928—G. O. 7, '26 ..	19	8	75	340	351	839
Loss	25	107	310	346	660	1298

e. The assignment of the personnel has changed as follows:

	OVERSEAS			UNITED STATES				
	Panama	Hawaii	P. I.	Har. Defen.	Anti- Aircraft	Ry. Arty.	Trac. Drawn Arty.	Sound Rang- ing
1921 ..	1728	2429	2693	10,649	0	2357	5750	0
1928 ..	2085	2842	1206	3459	1141	457	353	125
Change	+ 257	+ 413	-1487*	- 7190	+1141	-1900	- 5397	+ 125

* Compensated by assigning 1531 Philippine Scouts.

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3. TRAINING.

a. General.

Considering the various conditions Coast Artillery organizations serve under in our overseas and continental garrisons, progress in training of all units during the year has been praiseworthy.

b. Gunnery and Target Practice.

(1) *Seacoast Guns.*—The following table gives comparative results of firings for the calendar years 1926 and 1927:

	No. of batteries		Average range		Average percentage of hits		Av. time per rd. of record fire in secs.		Hits per gun per min.	
	1926	1927	1926	1927	1926	1927	1926	1927	1926	1927
3" S. C.	4	4	4220	3985	34.10	40.52	21.20	12.44	1.222	1.826
6" B. C.	3	3	8783	7963	7.10	35.94	52.20	21.01	.194	1.466
6" D. C.	6	6	7503	8410	28.60	31.16	29.70	22.12	.704	1.050
155-mm.	14	14	8550	10,120	20.00	17.69	27.30	23.20	.481	.496
8" Ry.	2	2	12,926	12,598	34.00	25.00	126.70	62.51	.260	.224
10"	4	2	8972	8654	29.90	30.00	63.10	68.93	.308	.272
12" D. C.	3	5	11,008	11,651	39.60	32.00	54.90	65.69	.550	.301
12" B. C.	5	5	13,550	18,985	18.50	6.66	76.90	85.16	.159	.057
12" M.	15	14	10,572	10,646	12.70	18.13	87.40	71.82	.120	.157
12" M. (Ry.)	4	4	12,245	9796	16.30	10.71	106.00	128.47	.099	.134
14"	7	6	15,471	16,111	4.30	8.33	58.20	56.30	.057	.083

Analyzed, we find that 75% of the batteries fired at greater speed, the improvement being especially marked for the rapid-fire armament. Greater range was attained by 77% of the batteries. Fifty-four per cent of the batteries improved in accuracy, the greatest improvement being noted for rapid-fire armament. In hits per gun per minute improvements is noted in 78% of the batteries firing.

* * * * *

(3) The improvement in seacoast artillery practice is attributed to the system of competition introduced in 1926. Although not favorably received by some officers, there has been a general increase of accomplishment, interest, and enthusiasm. This is far more notable in the reports of those target practices for the calendar year 1928 which have been received to date than in the practices reported upon above.

c. Tactical Training.

(1) *Battle Practices.*—Battle practices were held in each of the defended overseas possessions, at San Francisco, California, at the Harbor Defenses of Long Island Sound, and at the Harbor Defenses of Chesapeake Bay. While practices of this kind have been held from time to time in overseas possessions since the World War, inadequate personnel and other causes have prevented in the United States. The allotment of funds for troop movements incident to Coast Artillery training in the United States for the F. Y. 1928 enabled concentrations to be affected at the three harbors named. This gave valuable train-

ing to the higher echelons and has the added effect of placing in service some batteries and installations normally without manning parties, thus enabling us to ascertain the true condition of equipment. It is hoped to synchronize the annual encampment of National Guard units and the active training of Reserve Officers with these battle practices in future so that the more important harbor defenses in the United States may be placed, in turn, approximately on a war footing.

(2) *Joint Exercises—Army and Navy.*—Minor joint exercises were held in the United States during the troop concentrations for the battle practices, the Navy furnishing in each instance such vessels as could be made available. In the Panama Canal Department a joint communication exercise was held in connection with a minor joint exercise off the Pacific entrance to the Canal, Army and Navy aircraft participating, as well as the Navy Control Force and the Harbor Defenses. The exercise was of considerable value to the harbor defense troops, but the greatest benefit derived was from ascertaining, in a practical manner, methods of coordinating the several systems of communication.

Extensive Joint Army and Navy exercises were held in the Hawaiian Department, in which all Coast Artillery units took part. That department apparently offers the best field for training of the combined arms in coast defense, with the Panama Canal Department a close second.

No report as to Joint Army and Navy exercises in the Philippine Department for the year reported upon has been received in this office.

While excellent results in tactical training are obtained at joint exercises, such as those held in the United States this year, it can not be denied that much is lost through the absence of mobile forces at these exercises. Even when these are only outlined by establishing the higher command posts for the defense of a section of the shore line, and a general attack is developed under the control of competent umpires, a sense of reality is introduced that enables these exercises to approximate in value those held in overseas possessions. Only one such exercise has been held in the United States since the World War—that in the Narragansett Bay Area noted in my report of last year. It is hoped such exercises may be made an annual feature of our training in the more important coastal areas.

(3) *Joint Training, Coast Artillery—Air Corps.*—The Air Corps has been generous in supplying the planes necessary for Coast Artillery training but reports received indicate that, with two exceptions, lack of means has prevented progress in testing the regulations for joint employment of the Coast Artillery and Air Corps. The exceptions referred to are the Hawaiian and Panama Departments. In the former such joint action was featured in the exercises referred to in (2) above. In the latter a special exercise of attack and defense was featured. Plans were made for joint exercises in the Harbor Defenses of Chesapeake Bay but these had to be abandoned as the Air Corps was unable, without material curtailment of scheduled training, to supply planes and airships in numbers sufficient. The training text referred to will necessarily have to be continued as a tentative regulation for the time being.

(4) *Troop Movements.*—All mobile Coast Artillery units, except the 51st Coast Artillery (TD), have made more or less extensive movements from home stations during the year. The 61st moved to Aberdeen Proving Ground, Md. for duty during the antiaircraft tests; the 62d to Fort Tilden, N. Y., for target practice; the 63d to Capitola, Calif., for tactical exercises and target practice. The 1st Sound Ranging unit moved to Aberdeen, Md., and established its sound ranging stations under field conditions. The 52d Coast Artillery (Ry) moved from Fort Eustis, Va., to Fort Story, Va., and established batteries and communications under conditions that would be normal for beach defense or for harbor defense in war. While the 51st Coast Artillery (TD) has at Fort Eustis, Va., terrain well adapted to its training, plans are in preparation to include that unit in the movement to Fort Story during the next practice season.

d. The Coast Artillery School.

(1) Except for a rearrangement of the Battery Officers' Course, with a view to accentuating further the practical side of the instruction, the courses at the Coast Artillery School have continued substantially as described in my annual report for 1926. The full report of the Commandant has been forwarded to the War Department.

(2) The following tables show the number of students in each department during the past year:

OFFICERS' DIVISION

<i>Course</i>	<i>Duration</i>	<i>No. Completing Course</i>
Advanced	9 months	32
Advanced Engineering	4½ months	3
Advanced Gunnery	4½ months	3
Battery Officers'	9 months	48
Refresher	Varied	5
Battery Officers' for National Guard and Organized Reserves	1½ months	27

ENLISTED MEN'S DIVISION

<i>Course</i>	<i>Duration</i>	<i>No. Completing Course</i>
Electrical	9 months	26
Master Gunners'	9 months	5
Radio	9 months	5
Clerical	4½ months	36
Special Radio, National Guard	2½ months	13

(3) In addition, the Department of Correspondence Courses has prepared seven and revised two subcourses, has submitted the texts of five original training regulations and revisions of eleven training regulations; and has initiated work on several additional training regulations, correspondence courses, and field manuals.

e. The Coast Artillery Board.

(1) This Board acts as an advisory agent to the Chief of Coast Artillery. The following are the more important projects considered by the Board during the past year:

Gas proofing plotting rooms, seacoast batteries.

Ford Gun Data Computer.

Self-synchronous Data Transmission System.

Improved range and deflection correction devices.

Aerial Spotting.

Arrangement of antiaircraft guns and fire-control instruments (determination of effect of blast).

The antiaircraft trial shot problem.

Fire control, antiaircraft machine guns.

Binaural training.

Sound-ranging equipment.

Motor transportation for Coast Artillery Corps.

Gunnery and analyses of target practice reports.

(2) There follows a summary of work accomplished and remaining on hand:

Projects on hand July 1, 1927:

(a)	Referred to Board by OCCA	27	
(b)	Originated by Board	4	
			<hr/>
			31

Projects received and initiated during year:

(a)	Referred to Board by OCCA	53	
(b)	Originated by Board	10	
			<hr/>
			63

Total projects considered	<hr/>	94
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Status of Projects:

(a)	Referred to Board by OCCA:		
(1)	Completed	62	
(2)	Uncompleted	18	
			<hr/>
			80
(b)	Originated by the Board:		
(1)	Completed	8	
(2)	Uncompleted	6	
			<hr/>
			14
			<hr/>
			94

Projects on hand July 1, 1928:

(a)	Referred to Board by OCCA	18	
(b)	Originated by the Board	6	
			<hr/>
			24

f. Training of Civilian Components.

(1) *National Guard.*—During the past year all target practice reports of National Guard organizations received by the War Department have been reviewed in this office and comments thereon submitted to the Chief of Militia Bureau. This policy has been very beneficial in that it enables the Chief of Coast Artillery to have more complete information concerning the performance of a greater amount of Coast Artillery materiel, it makes available additional information in reference to the details of training regulations in order to correct any deficiencies that may be found, and it permits a comparison being made between the various units in the Army of the United States.

It is contemplated during the coming year to publish more complete details of the results of the National Guard target practice than has been done in the past.

(2) *Organized Reserves, Reserve Officers' Training Corps, and Citizens' Military Training Camps.*—All officers charged with supervising target practices held by these components during the past year have been required to furnish detailed target practice reports thereof. The advantages of this are similar to those enumerated for the National Guard.

(3) Assistance has been given by this office to the tactical training of other components where practicable. For example, problems, drawn up at the Coast Artillery School, were furnished the Commanding General, III Corps Area, on which were based the field training of a National Guard antiaircraft regiment; qualified Coast Artillery officers were designated as umpires.

Such problems, and those used during the preceding year at Camp Upton, N. Y., have a wide influence in the service in raising the standard of training. It is expected that they will form the basis for effective mobilization training.

(4) The R. O. T. C. units inspected all showed a very satisfactory condition in training and spirit though facilities vary greatly. School authorities are generally interested and favorable to military training. . . .

g. Training Texts.

(1) *Regulations.*—The status of training regulations is as follows:

Printed or mimeographed	52
Being written or revised	12
In hands of The Adjutant General awaiting approval	3
Approved, awaiting printing	3

70

The reduction in the total from the 78 reported upon last year is due to a policy of consolidating texts where this may logically be done. Further consolidation will result from revisions now under way. By this means much repetition is avoided and also the frequent necessity, while studying one text, for referring to others.

(2) All instructional texts pertaining to submarine mines are being completely revised and rewritten.

(3) A member of the Training Section, this office, has been detailed for part time duty in the Office, Assistant Chief of Staff, G-3, in connection with the preparation of field manuals. He supervises also the work of the Coast Artillery School in the preparation of branch manuals. It is believed the training literature of the branch will be simplified and can be reduced when these manuals are completed.

(4) *Correspondence Courses.*

Completed and approved	10
Under preparation or revision	6
To be prepared	3
Total	19

Much favorable comment has been received from Reserve Officers as to the correspondence courses recently issued, and there is no doubt that this system of instruction has proved its value.

h. Organization Tables.

A large number of organization tables have been revised during the past year to secure uniformity and to present in better form the actual organization of the several units. The status is as follows:

Printed and distributed: 25 Peace; 42 War.

Awaiting approval: 8.

Awaiting revision of equipment tables: 6 Peace; 15 War.

4. MATERIEL.

* * * * *

e. The equipment for terrestrial sound ranging has been under development with the assistance of the Signal Corps. It has been given a service test during the last year and found satisfactory. It is expected that it will be adopted as standard within a short time.

f. The antiaircraft tests that have been held at Aberdeen Proving Ground, Md., during the past two years, through the close cooperation of the Ordnance Department, the Corps of Engineers, the Signal Corps, and the Air Corps, have resulted in surprising progress in antiaircraft fire control for guns. New equipment has been developed that so far exceeds the efficiency of the war-time materiel now in service as to require immediate action to secure rearmament of antiaircraft gun units. Funds have been appropriated for the F. Y. 1929 to initiate this rearmament program. Fire control for machine guns beyond tracer ranges is still in an experimental stage; various experimental devices which promise to solve this problem will be tested at Aberdeen Proving Ground this fall.

g. A comparatively inexpensive type of emplacement for 155-mm. guns has been designed and given a satisfactory service test in Panama. It allows the trails to be moved quickly and this gives the gun 180 degrees or, if desired, 360 degrees of field of fire. As the gun has only a limited traverse on its carriage, this type of emplacement adds considerably to its usefulness against rapidly moving targets.

h. The personnel of the 52d Coast Artillery (Ry) have devised a system of ammunition service from car to gun enabling loading to be continuous throughout a wide traverse of the piece. As a result, the falling off in rate of fire noted in Par. 3 *b* for the calendar year 1927 has been corrected and an improvement will be recorded for the present year.

* * * * *

5. CONCLUSIONS.

a. In technical training the condition of the Corps is satisfactory in all branches.

b. In tactical training there has been a marked advance during the past year. This should be continued by the allotment of the necessary funds for troop movements. It is very desirable that the minor joint exercises be extended by outlining, at least, the mobile coast defense forces for sectors of the coast line adjoining the harbor defenses at which these exercises are held, and that sufficient aircraft be made available to develop the Air Corps' mission in coast defense.

c. The progress of development work toward standardization of equipment has been gratifying.

*"The frontier army post, serving to protect the settlers from the Indians, has acted as a wedge to open the Indian country and has been a nucleus for settlement. In this connection mention should also be made of the government military and exploring expeditions in determining the lines of settlement. * * * The growth of nationalism and the evolution of American political institutions were dependent on the advance of the frontier. * * * After King Philip's War, while Albany was still in the fur-trading stage, the New England frontier towns were military agricultural outposts against the Indian enemy. * * * The Army of the United States pushed back the Indian, rectangular territories were carved into checkerboard states, creations of the federal government. The later frontiersman leaned on the strong arm of national power." Turner, F. J., The Frontier in American History. pp. 16-17, 24, 44, 218.*

Mechanization—Aloft and Alow

By MAJOR C. C. BENSON, Cavalry

A roar from the exhaust of a 400-horsepower motor, a blast of track-driven sand, and a new war machine charges away to show what it can do across country. It bounds into the air at the edge of a stream and lands on the far bank going at forty miles an hour. With the throttle wide open, the machine heads for a steep sandy hill and skyrockets over the crest with two feet of daylight showing beneath the hull. "Hull" is used advisedly, for this machine will float, and can no doubt be taught to swim. Presently the machine returns and the driver borrows a pair of goggles—says he can't see through the sand storm when he steps on the gas. The demonstration continues, with figure eights at speed that would shame an international polo pony, and some road work in which a Packard straight-eight gets second money. The performance of Mr. Christie's new wildcat will convince the most conservative observer that Mechanization is picking up.

Mechanization in the military sense implies the use of mobile machines in combat. Aircraft, tanks, and armored cars are outstanding examples of fighting machines used during the World War. We are all more or less familiar with the subsequent rapid development of aircraft and the many uses made of planes in commercial service as well as in the Army. The popular demand for airplanes has reached a point where the continuous development of machines and the training of pilots are assured. We are now beginning to think about mechanization as applied to the ground forces of our Army.

Last summer the Experimental Mechanized Force at Fort Leonard Wood raised the curtain on this phase of the program. Because the force lacked fast tanks that could travel under their own power, it was really motorized rather than mechanized. It did serve, however, to try out plans that have been matured recently in the War Department. The series of exercises took place during July, August, and September; they required the combined efforts of about eleven hundred men of various Regular Army Units.

In organization, as in everything else, this force was experimental. It included Light Tanks, Heavy Tanks, Infantry, Field Artillery, Engineers, Anti-aircraft Artillery, Signal Corps, Chemical Warfare Service, Armored Cars from the Cavalry, an Ammunition Train, a Medical Corps detachment, and Motor Repair units. For certain exercises, Air Corps units were attached. Three months of close association and cooperation brought out a variety of ideas on the organization of a Mechanized Force. There were many hot discussions—lieutenants, captains, majors, and colonels—we all contributed our views, and occasionally listened to the opinions of others. Those friendly discussions

NOTE: By special arrangement with the editors, this article appears in the January issues of several publications other than the COAST ARTILLERY JOURNAL.

still continue, for no one—not even the War Department—has as yet come out with an Approved Solution. Serious study of Mechanized Force organization is one of the most obvious beneficial effects of the summer's work.

All units of the miniature E. M. F. army were completely motorized or mechanized. Motorized units had only transportation; mechanized units had transportation plus fighting machines. Some of the motor equipment was ten years old; some was brand new. There were trucks with well-worn solid tires, and trucks that enjoyed the luxury of oversized balloon pneumatics. Cross-country cars and motorcycles covered an equally wide range—some had gone 100,000 miles and others were painfully new. Altogether there were about thirty different makes of old and new commercial vehicles represented in the line-up. Few of us had realized that truck manufacturers are now turning out machines that can travel at high speed. On good roads even the big fellows with seven and eight-ton loads can step up to forty miles an hour. In so far as commercial equipment will meet the needs of mechanized units, there will be no difficulty in finding plenty of fast sturdy machines.

E. M. F. training covered three main subdivisions—unit training, marches, and tactical exercises. Individuals from all units had received some training in work with motor equipment before joining the E. M. F., but there was constant need for greater knowledge and experience. The men went at their work with enthusiasm and displayed great interest in mastering the details of their machines. When reassignments were necessary, it required a direct order from the C. O. to pry a driver loose from "his" machine. Unit training soon reached the point where road marches were possible. Sections composed of about fifty vehicles made some preliminary marches of forty to sixty miles; then the whole force made several marches—90 miles, 140 miles, 420 miles. Between marches, units commanders conducted the tactical training of their respective organizations. Combined tactical training began on August 28 and continued at the rate of two or three exercises each week for over a month. These maneuvers enabled unit commanders to demonstrate the capabilities of their organizations and brought officers of the various branches into close contact. Each of the exercises focussed attention on problems that called for original solutions—without benefit of precedent. Instead of merely complying with well established regulations, the E. M. F. officers were trying to create something new. Needless to say, the training was the most interesting that they have experienced in the past ten years.

What we did last summer is important only for its effect upon the future. Future plans should begin with clean-cut answers to the usual questions—"What is the purpose of a Mechanized Force?" "How will its establishment affect other branches?" All branches of the Army must adjust themselves to the introduction of this new weapon; and all officers who are directly concerned with developing an efficient Mechanized Force must crystalize their ideas on these questions. In the absence of authoritative opinion, I submit the following: The purpose of a Mechanized Force is to provide army and higher commanders with an additional powerful weapon, which will combine fire power, shock,

and speed, to a much higher degree than now exists in any one combatant arm. Specifically, units of a Mechanized Force could be used to great advantage for advance, flank, and rear guards; to seize and hold temporarily distant key positions or critical areas; to cover tactical or strategical concentrations; for raids, wide envelopments, turning movements, exploitation, and pursuit. Forests, mountains, and swamps present insuperable obstacles to the operations of a Mechanized Force; consequently, it cannot supplant the Infantry or Cavalry.

Whatever the size of any mechanized unit that may be authorized, it should be well balanced and highly mobile. Tanks that require railway transportation have no proper place in such a force. Similarly, slow cumbersome artillery should be excluded. Air forces, other than the necessary observation and command planes, need not form an integral part of the mechanized force. For a particular operation, Army or G. H. Q. could attach any or all of these powerful weapons, but to include them in the normal organization of a mechanized force would kill its mobility.

Light artillery in a mechanized unit should be effective against either ground or air targets. Otherwise, the force will be encumbered with single-purpose weapons, such as are now standard in Field Artillery and Antiaircraft Artillery units, with the additional burden of many non-combatant vehicles. Every exercise conducted by the E. M. F. showed the vulnerability of a force that is diluted with a surplus of transportation. When the force deploys for action, the non-combatant vehicles become "led horses." Their destruction would cripple the force; hence it is necessary to use combat elements for their protection. The solution is to eliminate non-combatant vehicles, and concentrate on fighting machines. The present 75-mm. antiaircraft gun, if suitably mounted on a fast tank chassis, would serve admirably the light artillery needs of a Mechanized Force.

With these preliminaries out of the way, we may as well proceed to organize—on paper—a mechanized combat team such as might be assigned to a detached corps or to an army. For convenience, we shall call this unit a Mechanized Brigade.

Fast Tanks—One regiment of three battalions. A total of

130 fighting tanks, each armed with gas or smoke device, 3 or 6-pounder cannon, and .30-caliber machine gun.

Mechanized Artillery—One regiment.

8 howitzers (105-mm.) on fast tank chassis.

16 guns (75-mm.) on fast tank chassis, for use against either ground or air targets.

4 searchlights for antiaircraft work, on fast tank chassis.

8 mortars (4.2 C. W. S.) on fast tank chassis.

Command tanks for battery and higher commanders.

Mechanized Infantry—One battalion.

48 machine guns; 48 automatic rifles; 16 anti-tank cannon.

Carried on fast tank chassis.

Command tanks for company and higher commanders.

Special Troops—

Headquarters—one company.

Armored Cars—one company.

Airplanes—one observation squadron, plus necessary command planes.

Antiaircraft—one battery, armed with .50-caliber machine guns in quadruple mounts.

Engineers—one company.

Signal—one company.

Medical—one company.

Band—one.

G-4 Units—

Repair and Salvage (for both machines and weapons)—one company.

Supply Train—one company.

At least one Mechanized Brigade is necessary to test the soundness of organization, to test new equipment, and to develop methods of training. For effective training, two brigades are needed to permit the development of offensive tactics in mechanized warfare. Then there should be the necessary technical and tactical schools; research, engineering, procurement, and supply establishments; and a suitable administrative organization. Without half trying, we evolve a new branch of the Army.

Perhaps there is no need of creating a separate branch. The Cavalry or Infantry might adopt the newcomer. Cavalry and the Mechanized Force will have much in common tactically; and between them they could cover practically any kind of terrain. The Cavalry would gain in fire power, shock, and mobility by utilizing fast cross-country vehicles for transport and combat. Significant items in the last annual report of the Chief of Cavalry indicate that the Cavalry is fully alive to the advantages of partial mechanization. However, horses and hardware require quite different handling, and the Cavalry is interested primarily in horses. The Infantry, which has had control of the Tanks for the past eight years, is building up an excellent Tank School organization. If the Mechanized Force is organized as an offshoot of the Infantry, existing facilities can be expanded to meet the demands for trained personnel. However, since the Infantry absorbed the Tank Corps a marked change has occurred. Modern tanks are not the blind lumbering monsters of ten years ago; increased mobility has prepared them for cooperation with many branches—particularly with the Cavalry and the Air Corps. In other words, the tank is no longer an exclusively Infantry weapon. A larger sphere of action is opening up for fast tanks, and for any mechanized units that may be built around them. To imbed these highly mobile units in slow-moving masses of Infantry would be wasteful. We cannot expect Infantrymen or Cavalrymen to specialize on mechanization in addition to their other duties; and yet without specialization of a higher order, mechanization will land in the ditch.

If the Mechanized Force is to develop its full powers, it must depart from old methods. It must break away from traditions which were fixed before the advent of fast powerful fighting machines, and seek new ways to apply the

old principles. Before it can win a place as a worthy member of the combat team, it must develop new methods which are better than the old. An organization to be useful for this purpose should be one that is committed entirely to the future.

One solution of the problem is to resurrect the Tank Corps. Tanks have been the nucleus for experiment and will undoubtedly form the backbone of the Mechanized Force. The fast tank chassis will be the most important single item of equipment, because it will be utilized not only by the Mechanized Force, but also by many other branches. As it will necessarily be a special vehicle (non-commercial), it should receive special consideration from the men who will handle it in time of war. There will be many other necessary items of equipment which must fit together in the operations of a Mechanized Force and in coordinated mechanization plans for the whole Army. In addition, there should be continuous experiment and development work on heavy tanks for the Infantry, tanks and reconnaissance cars for the Cavalry, cross-country cargo carriers, and motor vehicles of various types for all branches. A single responsible agency to execute War Department policies on these matters is needed. That agency, if we may judge from war records, might well be the Tank Corps.

No matter who sits in the driver's seat, mechanization will entail considerable expense. Fighting machines are costly. However, when we were face to face with long casualty lists in the World War, the American program called for the expenditure of \$175,000,000 on tanks alone. To get any tanks at all, we had to beg them from Great Britain and France. Even though our allies gave us their tank plans, we were unable to send a single American-made tank into action. If we have forgotten those lessons, it is time to recall them.

We make no bones about spending hundreds of millions on the peacetime development of air forces. Their "flaming coffins" of World War days have long since joined the scrap heap. Not so with our tanks—the slow-moving ten-year-old machines now in the hands of Regular and National Guard troops would be blown to bits by the modern anti-tank weapons of any first-class power. The modern fast tank can run circles around them. Even with a highly efficient Air Corps, it is probable that in any future war there will still be some fighting on the ground. The ground troops deserve the best fighting machines that money can buy—and plenty of them. In money now or men later, we must pay the price.

Some Notes on 155-mm Gun Firing

By MAJ. C. D. Y. OSTROM, C. A. C.

RECENT memoranda publishing instructions concerning fire against naval targets and the results obtained in such practices bring up several questions for discussion. Here only certain phases of this matter will be considered and these with special reference to firings by 155-mm. gun batteries. This gun will be used as our example since we can obtain record of a greater number of practices fired by this weapon with a larger number of rounds fired per practice than for many other types of cannon. To offset the claim that this may not be a good selection from which to draw general conclusions because of the small caliber and reputed accuracy of the gun, one must bear in mind that the carriage was not designed for fire against a moving target, the conditions of emplacement, and the required rate of fire.

The propriety of the equations by which the score is determined will not be discussed, this paper being concerned rather with the values of some of the terms used in the equations as indicated by results obtained in recent target practices.

Several curves have been plotted to indicate certain relations between some of these terms. These can not give definite, clear-cut values. All are so inter-related that they must be considered as a group and then as giving indicative rather than fixed values. These curves are based on data obtained from reports of well over one hundred different practices, fired during four years in all parts of the country and under widely varying conditions. The poorest as well as the best have been considered, all practices coming to hand having been used with few exceptions. No practice fired at a range in excess of 14,000 yards has been considered, as in such a case the increased powder charge must have been used and the results therefore are not comparable. Throughout this article the reader must bear in mind that the firings on which these curves were based have been held in the years 1925 to 1928, inclusive. There has been during this period an annual trend toward increase of range of practices and, especially during the last two years of this period, a decided effort to reduce the elapsed time between rounds. Thus many of the values entered against a range of 10,000 yards or so and most of those plotted against a time of K seconds or less have been determined in these two latest years. For these two years it is believed the state of battery training has been higher, methods of record keeping and analysis have been uniform and more accurate, with the result that values for 1925 and 1926 are not strictly comparable to those for 1927 and 1928. Be that as it may, the differences are not so great as to preclude the comparisons made here. Much of the data from which these curves are constructed may not be published; in any case the space they would occupy would scarcely be justified. For the first

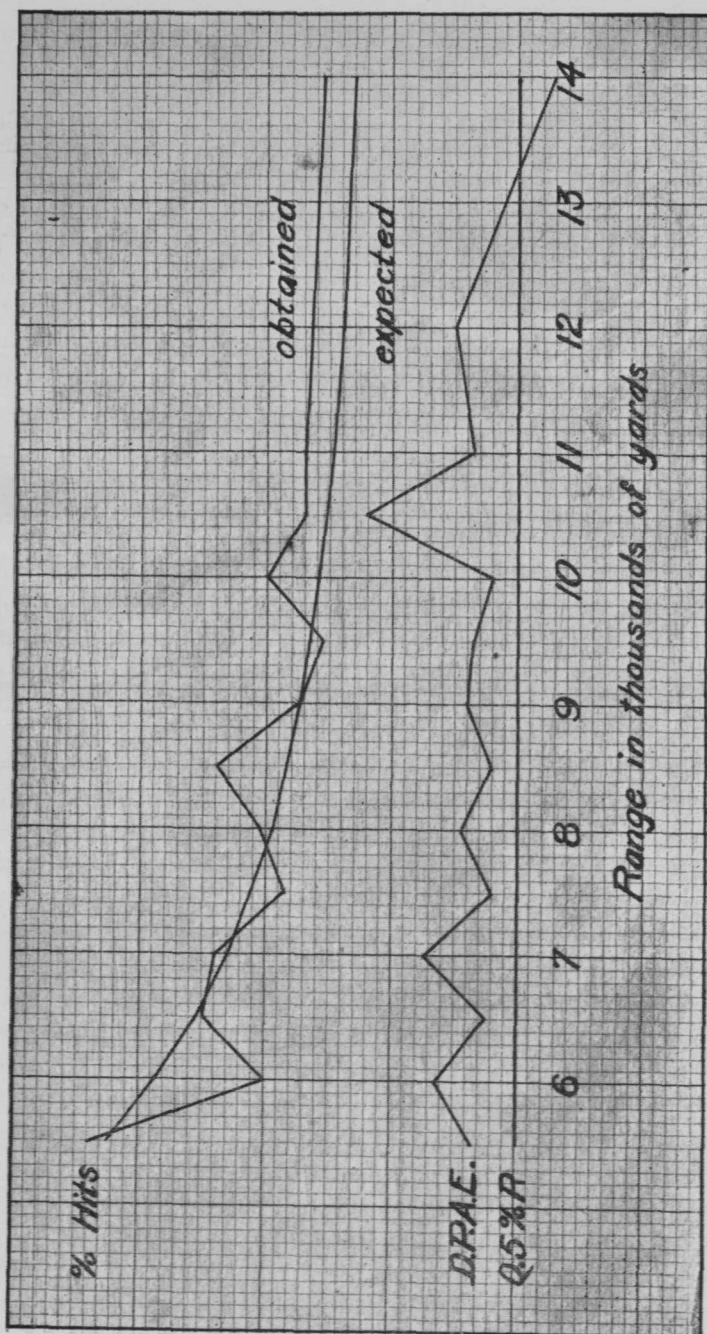


FIG. 1

reason, scale values have not been indicated on the curves. This but slightly lessens their value as we are interested primarily in comparative values.

Our principal interest is in hitting—without hits a battery is of small value. And of equal importance is the rate of hitting. This is emphasized by being the first component in the scoring equation. In the past year an attempt was made by a change in this component to increase materially the rate of firing in the belief that the rate of hitting would be likewise increased. At the same time a minimum range for firing was announced. Two relationships have been used in the representation of hitting in the curves plotted: per cent of hits obtained and the hits per gun per minute determined.

Per cent hits have been plotted against range in Figure 1. These have presumably all been determined on the present type of destroyer target. Records available for the year 1925 did not yield these data. The jagged line shows obtained values, the curve those to be expected. These latter have been computed on the assumption that the battery DPAE was the mean value of those obtained in the practices studied as brought out later; viz., 57/100 of one per cent of the range. This curve would indicate only that reasonably satisfactory results have been obtained in recent practices.

In the A component of the scoring equation are the terms K and t , K apparently being a term intended to correlate and equalize the effect of the rate of fire of various cannon and mounts, and t the corrected time of practice in seconds. From study of these values, one reaches the conclusion that K seconds is considered the normal value for the average time per round per gun, the T'' of our reports.

In Figure 2 a curve has been plotted showing the relationship between the per cent of hits obtained and the firing interval, another test of battery efficiency. In order to plot a rational curve of these values it was necessary to reduce tabular values to equivalent values at one single range. Obviously a curve of these values in which the per cent of hits obtained at say 6000 yards were averaged with those from practices at 10,000 yards or 14,000 yards or any other range would be without value. To permit comparison, a range of 10,000 yards was selected. The following reduction ratio was used: the per cent hits that would have been obtained had the practice been fired at a mean range of 10,000 yards is to the per cent hits obtained at the actual mean range of the practice as the probability of hitting at 10,000 yards mean range is to the probability of hitting at the actual mean range of the practice. The horizontal line P through this curve represents the per cent of hits to be expected when firing at a range of 10,000 yards with a battery DPAE of 57/100 of one per cent of the range, with a battery height of site of 90 feet, using the hypothetical destroyer target assigned for this gun.

In this same figure, the curve showing hits per gun per minute has been plotted, the wavy line being the plot of values determined in these practices, while the smooth curve indicates the theoretically expected values under the conditions stated in the preceding paragraph. After studying these curves

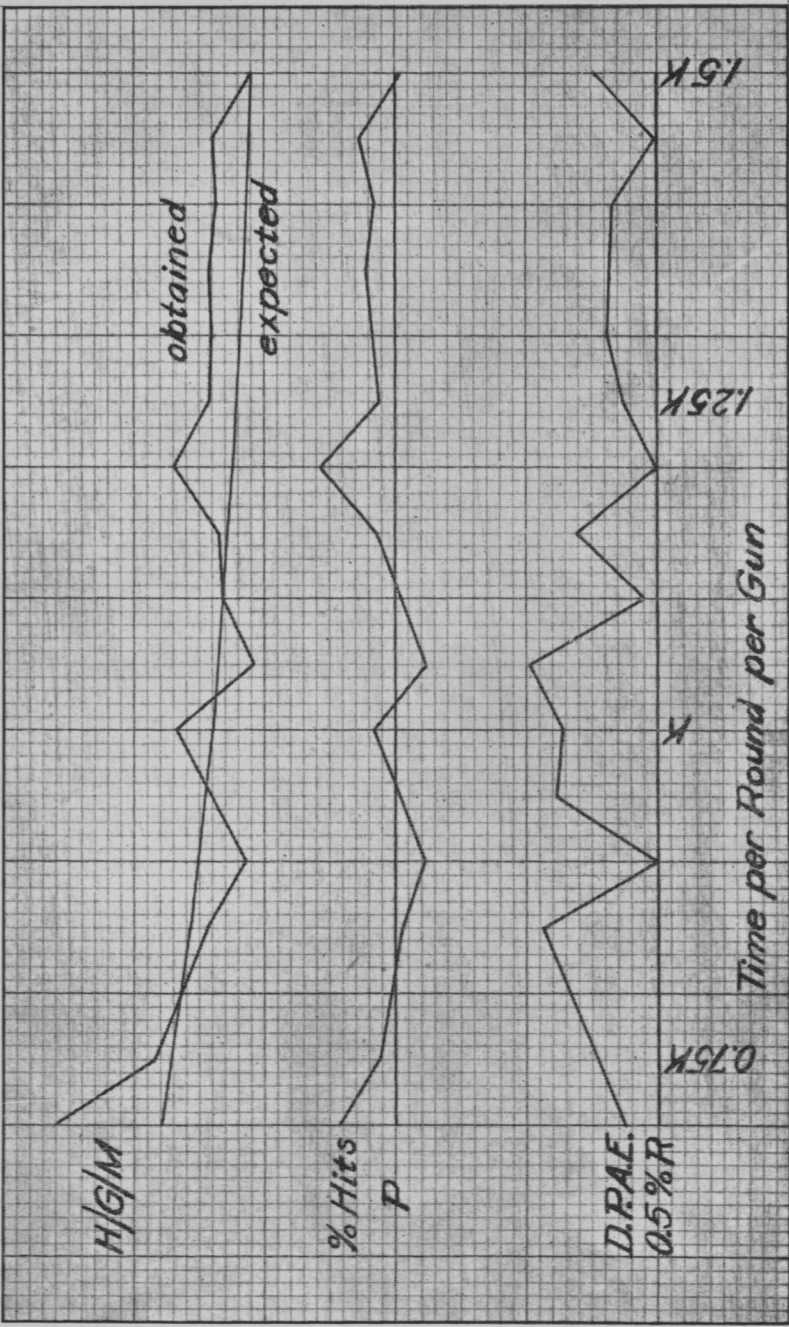


FIG. 2

keeping in mind the limited number of practices for each time interval, ranging from two to ten, we may draw the conclusion that at least for such short practices as our allowance of ammunition for target practice permits, the accuracy of fire is about independent of the rate of fire.

No term seems to come up for discussion more than does the DPAE. Remember, this is a *battery* DPAE and not a *gun* DPAE. In the usual case, four guns will contribute to this value. Personnel errors in laying may be, and probably frequently are, included in what is considered the battery DPAE. For the most part in plotting these curves, the value of this developed probable armament error, the DPAE, has been expressed as a percentage of the range. This is a convenient and interesting relationship to use. It eliminates further reference of data to range when plotting and renders unnecessary any reference to firing table values of probable errors with consequent discussion of their propriety. It permits ready comparison of the armament probable errors developed at different ranges. Expressed in these terms, developed armament probable errors may be averaged for any time interval. In Figure 1, values of the battery DPAE have been plotted against mean range. A mean value of

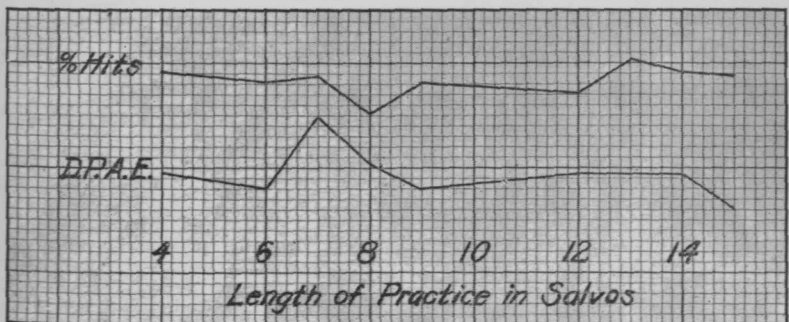


FIG. 3

battery DPAE has been computed from records of practices for each five hundred yards. A recent article in the COAST ARTILLERY JOURNAL recommended that a value for probable error in range be used equal to one-half of one per cent of the range; consequently the horizontal line representing this value has been superimposed on the curve. We may note here that while quite close to the recommended value, the mean of battery DPAE's touches this at but a single point, that point being where the very small number of practices for which data are available renders the mean of doubtful value. It is interesting to note that the mean value developed from this curve for the battery DPAE is 57/100 of one per cent of the range. The probable error of all values was determined to be 12/100 of one per cent of the range, so that the battery commander may expect in half of his practices to develop a range probable armament error lying between 45/100 and 69/100 of one per cent of the range, lacking any better information relative to his battery.

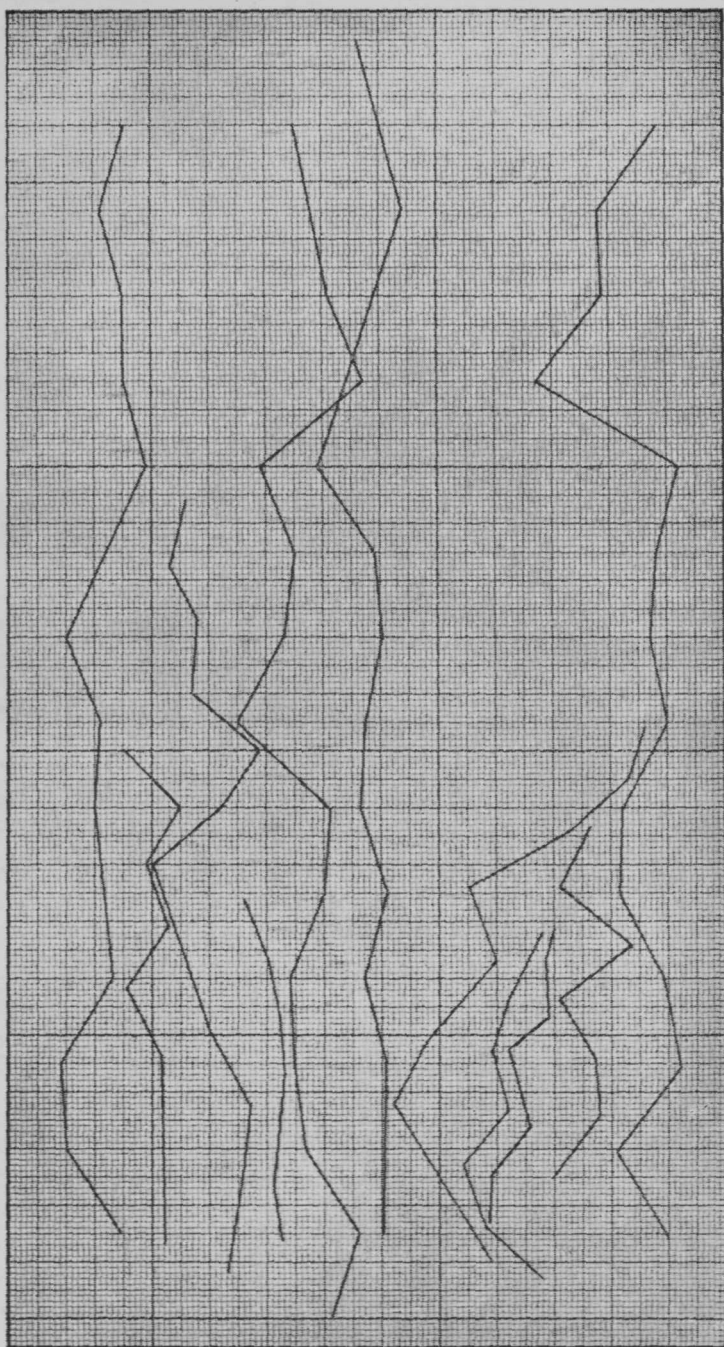


FIG. 4

In Figure 2 are plotted battery DPAE's expressed in terms of percentage of range against average time per round per gun in multiples of K. Inspection indicates that the value of the DPAE has not been greatly affected by shortening the firing interval, though more uniform results seem to have been obtained with slower firing. Study of the data from which the curve was constructed indicates that the values corresponding to those near 0.75 K should be as readily expected as those plotted against the larger values of K. An interval of 1.5 K seconds between rounds is quite deliberate firing and no increase in accuracy should be expected from slower firing as this time interval affords ample opportunity for the careful setting of firing data and for a complete check of the laying.

In studying the equation from which the score is determined we find that the value of the battery DPAE enters directly into the numerators of the B and C components and indirectly (through P) into the denominator of the first part of the A component, in all cases entering into these components in such manner that the larger the DPAE, the larger will be the computed value of the component. The only factor in the score tending to cause the battery commander to reduce his DPAE is the denominator of the B component and the effect of this seems but slight. The limited number of complete records at hand indicate that the absolute value of the DPAE has little effect on this B component, as the DPAE and mean dispersion are interdependent and this term is in fact a measure of battery calibration, as is intended. One may say that the desire to obtain hits will cause the battery commander to attempt a low battery DPAE. However, under the present score, the battery commander can so control the time factor as largely to neutralize the effect of few hits; with a single hit in a practice and a time factor of 0.75 K, he can get a score for his practice that will be rated excellent. So he will make a greater attempt to control the position of the center of impact without great desire to reduce the DPAE. What, then, is going to cause the battery commander to concentrate on the development of a small battery DPAE, certainly a matter of prime importance?

In the score, better assign a certain value to the factor that is to represent probability of hitting, be it a firing-table probable error or be it expressed in terms of a certain percentage of the range. I prefer the latter and recommend that a value of six-tenths of one per cent of the actual mean range be assigned as the value of probable error to be used in computing score. This is a convenient figure to use and is sufficiently close to the value determined from the records of the previous practices considered. The battery commander should expect to develop this in at least half of his practices. But, even though it is not used in the score computations, let us by all means continue to compute the value of the battery DPAE as at present and let some small percentage of the total score or rating value be based on the obtaining of a small value for the battery DPAE in each practice.

Figure 3 might be termed a representation of battery fatigue. Here both the per cent of hits obtained and the battery DPAE in terms of per cent of range have been plotted against the length of the practice in salvos. Reference is made to pages 127-158 of C. A. M. No. 8 of 1928 on which the curve of black circles—"centers of impact if no corrections nor personnel errors had been made"—give additional information. A representative group of these has been replotted to a common scale of time and range deviations and is reproduced here as Figure 4. This figure contains graphs of practices varying from seven to fifteen salvos in length and from about fifteen to thirty seconds firing interval. Individually, they indicate the state of training of the battery; collectively, they confirm the statement made above that our target practices are not of sufficient length to give us any information as to the effect of the rate of fire on battery fatigue, another measure of battery accuracy.

Recently these guns have been fired with satisfactory results using Case III against moving targets in several practices with a fifteen seconds or less average time per round per gun. With further slight modifications of the service of the piece and using Case II, it should be possible to reduce this appreciably. If this rate of fire is to be expected for the future, the carriage should be modified. This carriage was designed for fire against fixed land targets and at present is unsuitable for use against any sort of moving target, let alone such a rapidly moving one as should be its normal objective. Desirable modifications would include the removal of the sight and traversing mechanism from the vicinity of the quadrant sight and elevating mechanism. This would greatly facilitate both the laying and checking of data and should certainly result in more rapid and more accurate fire, reducing the firing interval and the battery DPAE at the same time to give more hits per gun per minute.

"Insurance of life and property, by preventing the loss thereof, is worth all the 'premiums' expended in that prevention." Professor Charles S. Spooner, President of the Vermont Peace Society, quoted in Richard Stockton, Peace Insurance, p. 31.

Colonial Coast Forts on the South Atlantic

NORTH CAROLINA, SOUTH CAROLINA, GEORGIA, AND FLORIDA

THE vast expanse of territory extending southward from Virginia was once claimed by the English under the name of Virginia, by the French under the name of New France, and by the Spanish under the name of Florida. That was in the time "When all a man sail'd by, or saw, was his own," and the various claims arose from the discoveries of individuals who "sail'd by or saw" portions of this territory. The original Spanish claim to the whole continent, based upon Papal grant following the discoveries of Columbus, was rejected by other nations, and all subsequent claims were based upon direct explorations or upon actual occupation.

Sailing under a commission granted by Henry VII, of England, Sebastian Cabot explored the coasts of America in 1499, sailing from Newfoundland to Albemarle Sound or a little beyond. He made no landing near the southern limit of his voyage, and England made no immediate effort to exploit his discoveries; but it is upon his explorations that England's claim to the South Atlantic region was based.

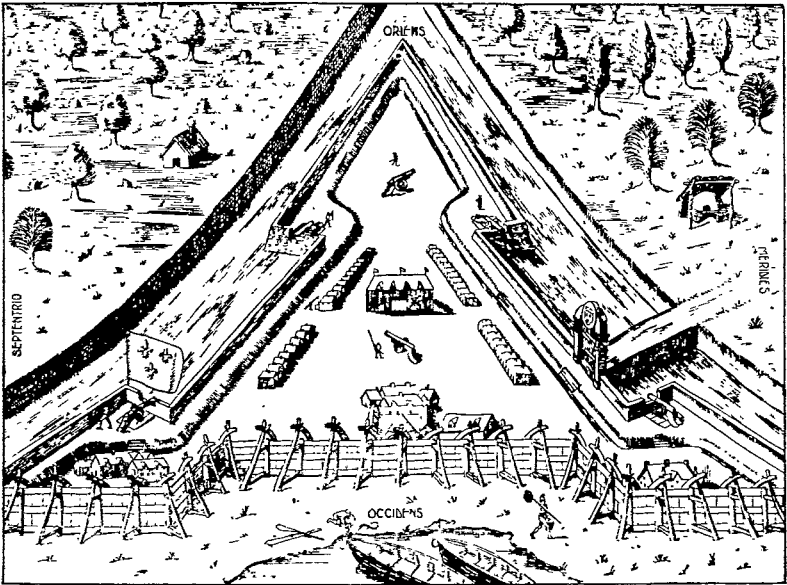
In the year 1512, Juan Ponce de Leon, an old visionary and former governor of Porto Rico, discovered and named Florida. Landing in the vicinity of the site of St. Augustine, he explored the country but did not go beyond the limits of the present state. In 1518 Lucas Vasquez de Ayllon followed the coasts of Florida, Georgia, and South Carolina to the mouth of the Combahee River, where he decoyed a number of Indians on board his vessel to be carried off and sold into slavery. De Leon in 1521 and De Ayllon in 1524 made second voyages to Florida, but both were forced by the Indians to leave the country.

In the latter year, Giovanni de Verrazano, a Florentine employed by Francis I, of France, reached land in the vicinity of Wilmington, North Carolina. By coasting along the Atlantic shores and trading with the natives, he set up a French claim to the continent from Newfoundland down to the twenty-fifth parallel of north latitude.

These conflicting and overlapping claims could be settled only by actual occupation, and France took the first step to secure this valuable and fertile region. Civil war raged in France between the Huguenots, or French Protestants, and the Catholics. The Huguenots were the weaker party in number, but they had a powerful friend in Admiral Coligny, who conceived the idea of providing a place of refuge beyond the Atlantic for his Protestant brethren. Obtaining a commission from Charles IX for that purpose, he sent out an expedition of two ships under Captain Jean Ribault.

This commander reached land in the vicinity of St. Augustine in April, 1562, and then coasted northward to the mouth of a river which, from the

“fairness and largeness of its harbor,” he named Port Royal. Landing his colonists “on the south eastern point of Parris Island, open to the ocean, upon a small creek,” not far from the present site of Beaufort, Ribault established his settlement and built a fort which he named Fort Charles, in honor of the king. This, the first coast fort built within the territorial limits of the United States, was “in length but a sixteen fathom, and thirteen in breadth, with flanks according to the proportions thereof.” Upon its completion, twenty-five or thirty men were designated as a garrison, and in June, Ribault set sail for France, bidding his colonists to “be kind to each other; let each love God and his neighbor; let no jealousies grow nor disputes make you live apart, but cultivate brotherly love and you will prosper.”



From Avery's *History of the United States and Its People* by permission of C. W. Burrows and A. W. Henn

FORT CAROLINE

They might, perhaps, have prospered more had Ribault cautioned them to cultivate grain and vegetables, for he was unable to send them provisions; and when their supplies became exhausted they became a shiftless burden upon the bounty of their Indian neighbors, who were so friendly that they even helped to rebuild the fort when it was accidentally consumed by fire. Jealousies crept in and mutiny and murder followed; supplies failed and famine threatened. Discontented and disheartened, the colonists built, as best they could, an inadequate vessel, and set out upon the hazardous journey to France.

Undaunted by his first failure, Coligny sent out a second expedition, in 1564, under the command of René de Laudonnière, who had accompanied Ribault on the first voyage. Arriving safely at Cape François in June, Laudonnière explored the coast and decided to plant his colony on the River of May (St.

John's), in Florida. Here, on the northern bank of the river, he erected his fort, which he named Fort Caroline. This work was a triangular structure with walls built of fagots, sand, and turf. The western, or landward, side was fronted by a small ditch, and was "raised with terraces, made in the form of a battlement, nine foot high;" the river side was enclosed with "a palisade of planks of timber, after the manner that gabions are made;" and the south side comprised a bastion in which the ammunition was kept.

Laudonnière, repeating the error made at Fort Charles, neglected to cultivate the soil. The Indians became hostile, provision failed, and the men became mutinous. At this critical time, the English free-booter, Sir John Hawkins, arrived and shared his supplies with the colonists, and in August, 1565, Ribault arrived with immigrants, supplies, seeds, implements, and animals.

Spanish jealousy and bigotry were now aroused, and Philip II appointed Pedro Menendez de Avilez governor of Florida with a view to expelling the French from the soil and of establishing a Spanish colony in the vicinity. Menendez started with an expedition of thirty-six vessels, carrying twenty-six hundred soldiers, sailors, priests, mechanics, laborers, women, and children; and on August 28, 1565, the same day that Ribault reached his colony, the Spanish landed fifty miles further south. After reaching and naming the harbor of St. Augustine, Menendez sailed northward until he sighted the French vessels anchored off Fort Caroline. The French, not trusting the Spaniards, slipped their cables and put to sea with the enemy in hot pursuit. The Spanish, unable to overtake Ribault's forces, returned to St. Augustine and laid the foundation of this fortress, the first permanent settlement in America.

Upon learning that the Spaniards were fortifying themselves, Ribault left a small detachment at Fort Caroline and set out to attack St. Augustine. He anticipated an absence of about two days, but a sudden and violent tempest drove his fleet down the coast and wrecked every vessel. Menendez saw his opportunity and, not knowing that Ribault had been wrecked, hastened overland to destroy Fort Caroline before the French could return. With five hundred men, he attacked in a driving rain at dawn. The weak garrison was caught entirely unawares and was easily and quickly overpowered. The occupants of the fort, with the exception of a few who escaped to the small boats in the harbor and of some of the women and children, were put to the sword. Menendez then hung a sign in one of the trees, bearing the inscription: "*No por Franceses, sino por Luteranos.*" He changed the name of the fort to San Mateo, repaired it, and garrisoned it with three hundred men under Gonzales de Villareal.

Fearing the possible return of Ribault to St. Augustine, Menendez hurried back to that post, where he learned of the loss of the French fleet. Sending out detachments along the coast, he ultimately captured and killed Ribault and most of his command. About two hundred of the Frenchmen reached the coast near Carnaveral, about an eight-day march from St. Augustine, where they were engaged in building a small fort and constructing a vessel when the

Spaniards appeared in force. The French fled to the shelter of the woods, but subsequently about three-quarters of them surrendered and were, so it is said, treated kindly. The fort was demolished, the vessel burned, and the cannon spiked. The Spanish themselves then built and garrisoned near here a small fort which they named San Lucia.

Having expelled the French, Menendez turned his attention to the improvement of his own position. Satisfied with his location at St. Augustine, he constructed a log fort to cover both the landward and seaward approaches. This fort, named Fort San Juan de Piños, comprised a palisade of pine trees, without a ditch. The platforms were made of pine trees laid horizontally and filled in with earth. The works were never fully finished and were not capable of offering much resistance against a strong force.

The next step was an exploration of the coast and the establishment of outposts. Fort San Mateo was strengthened, and two other works, opposite each other, were erected nearer the mouth of the St. John's River. At St. Helena, at Avista, and on Amelia Island, Menendez left men to erect forts, and at each of the Indian towns visited by him he insisted on the construction of forts. Receiving reinforcements from Cuba, he built and garrisoned small forts south of St. Augustine at Carlos and Tequesta, near Cape Florida, and at Tocobayo, near Cape Canaveral. In the eighteen months following his arrival, Menendez had expelled the French, had carefully explored the coast from St. Helena to Cape Florida, and had built and garrisoned forts at St. Augustine, San Mateo, Avista, Amelia Island, and St. Helena, and block-houses at Carlos, Tequesta, Tocobayo, and San Lucia. San Mateo and St. Helena were more or less regularly occupied, but the other outlying forts were gradually abandoned.

Laudonnière, with some eighteen or twenty men, had escaped from Fort Caroline, and ultimately reached France. There the news of the massacre raised a furore among Catholics and Huguenots alike, but the weak Charles IX took no steps to avenge the outrage. So Dominique de Gourges, a soldier who had suffered as a Spanish galley-slave, resolved to seek revenge. Fitting out two galleys and a tender, he set sail for Florida in 1567 with less than two hundred men. Receiving a salute from the guns of Fort San Mateo as he passed, De Gourges proceeded to Fernandina Harbor, near the mouth of the St. Mary's River, where he assembled a thousand Indians to assist in the attack on the Spanish. The two forts at the mouth of the St. John's were quickly carried by assault and the garrisons put to death. Fort San Mateo, however, presented some difficulty until the garrison ventured an unwise sally, whereupon the fort was captured and the men killed. As Menendez had done three years before, De Gourges set up a pine plank with the inscription: "Not as to Spaniards, but as to traitors, thieves, and murderers." Then, in May, 1568, he demolished the forts and returned to France. Fort San Mateo was, shortly afterwards, again reoccupied by the Spanish.

While on a free-booting expedition in 1586, Francis Drake landed a piece of artillery and fired two shots at Fort San Juan. The Spanish garrison, supposing the whole English force was about to advance, fled into St. Augustine. Drake, thus encouraged to attack, led his men against the town. After making some slight show of resistance, the soldiers and the inhabitants retreated to San Mateo, leaving the town and the fort in the possession of Drake's men. After pillaging and burning the town, the English departed, whereupon the Spanish governor returned and commenced at once to rebuild St. Augustine. At that time the combined garrisons of Forts San Mateo and San Juan numbered only about four hundred men.

Further to the north English explorations had continued and efforts at colonization had begun. For many years England had neglected to press her claim to possessions in America, but a few enthusiasts were beginning to see the value of permanent establishments in the New World. Among the early promoters of emigration to America was Sir Walter Raleigh, who, undismayed by the disastrous failure of his half-brother, Sir Humphrey Gilbert, in Newfoundland, obtained a charter from Queen Elizabeth to found a colony in Virginia.

In 1585 his expedition of one hundred and eight colonists sailed under the command of the famous admiral, Sir Richard Grenville. The seven vessels of the fleet reached Roanoke Island in the summer, and there the colonists landed under the leadership of Ralph Lane. In establishing his settlement, Governor Lane built Fort Raleigh on the northern end of the island. Within a year, the failure of supplies and the enmity of the Indians so threatened the existence of the colony that Lane seized upon the chance arrival of Francis Drake in June, 1586, and abandoned his settlement. A relief ship arrived at Roanoke Island a little later and, to protect the interests of England, left fifteen men with supplies for two years.

Undeterred by his first failure, Raleigh sent out a new expedition of one hundred men, women, and children in 1587 under John White as governor. Destined for Chesapeake Bay, the expedition stopped at Roanoke in July to look for the men left by Grenville the year before, but a ruined fort and whitening bones were all they found.

Governor White decided to reoccupy Roanoke Island rather than to go on to the Chesapeake. After six weeks spent in establishing the colony and preparing its defenses, White left his family and returned to England in the interests of his colony. Unavoidably prevented from returning at once, it was August, 1590, before he revisited the site of the settlement. Upon his arrival he found the fort deserted and the colonists gone. Unable to locate his family and his colony, White returned to England; and the "Lost Colony" became one of the unsolved mysteries of the age.

Not until sixty years had gone by did this territory return to the pages of history. The land remained unsettled until 1653, when Roger Greene and some

of his Presbyterian associates, coming from Virginia, settled upon the banks of the Chowan River, near Edenton. Governor Johnston (1732-1754) says that "The Province of North Carolina was first settled by People from Virginia in low circumstances who moved hither for the benefit of a larger and better range for their stocks." Other dissenters followed in small groups until there was a considerable settlement around Albemarle Sound. In 1663 this area was organized by Governor Berkeley as the Albemarle County Colony under William Drummond as Governor.

In March of this same year, Edward, Earl of Clarendon, and seven associates obtained from Charles II a grant to all the lands lying between the thirty-first and thirty-sixth degrees of north latitude (later extended from 29° to 36°30'). In 1665 the Clarendon County Colony was organized at the mouth of the Cape Fear River under Sir John Yeamans.

In January, 1670, the Carolina proprietors sent three ships with emigrants under William Sayle to plant a colony below Cape Fear. They landed on Beaufort Island but, believing that the banks of Ashley River afforded better "pasturage and tillage," they removed in 1671 to the "first highlands of the Ashley river," a few miles above the present site of Charleston, on the site of Old Town. About eight years later they abandoned the spot; and upon Oyster Point, at the confluence of the Ashley and Cooper Rivers, they finally established their settlement.

The first settlers on the site of Charleston had reached there in 1670, and, in September, "we build our towne upon a point of land called Albemarle point seated upon the River that leads in from the sea called by us Ashley river where we are afortifieing ourselves" to such advantage that the community "In a little while will be so fortified as not to feare any attaque." By November the guns were mounted and the town "well fortified soe as not to feare all the Spaniards can doe."

For a good many years East Florida had led a comparatively peaceful existence. The settlement of the South Atlantic coast by the English naturally produced a certain amount of friction between Florida and Carolina, but the effect was not felt at St. Augustine until 1665. In that year Captain John Davis, an English buccaneer, made a descent upon St. Augustine with seven vessels and pillaged the town. At this time the Spanish settlement was protected by a totally inadequate octagonal fort with two round towers. The attack led the Spaniards to commence the erection of a substantial fort, the Fort Marion of today, on which work was continued more or less steadily until 1756, in which year it was declared completed. The new structure, named Fort San Marco, was a castle of soft stone, which mounted fifty pieces of artillery.

The people of Albemarle, distant from Florida and busily engaged in subduing the wilderness and guarding against the Indians, paid little attention to the European wars and less to the activities of the Spanish in Florida. Further south, however, the colonists felt the need of coast defenses, for they were con-

tinually harrassed and alarmed by the Spaniards and their Indian allies. In 1670, "About the 18th of August last we received newes that the Spaniard wth all the Indians about S^{te} Augustine & the Spanish Keyes was come to a River about 6 miles from vs & vpon the recepcion of the Larum havinge continuall notice for 7 or 8 days before of their cominge wee had putt our selves in reasonable good Posture to defend ourselves ag^t an Enemy the Indians informeth vs that there was about 200 Spaniards & 300 Indians & one as we conceived to be A ffryer & thanke God for itt . . . the Carolina ffriggott came in allmost to the mouth of the River . . . & wthin 2 dayes they wthdrew their Camp & Marched hoame."

The early forts deteriorated rapidly, as early forts seemed to have had a habit of doing, so in 1675 "The Grand Council having this day advised upon the erecting of a new fortification about Charles Towne," Captain Stephen Bull was engaged to lay out the new lines. By 1695 Charleston again required fortifications, and a Committee appointed by the House to "Consult and advise about the forme and maner of ffortifying of Charles Towne" found "by a nice Scruteny into the matter" that it would cost "one Thousand pounds at Least to make a Regular and Defencive ffortification at the End of the Broad Streete at the place Called Southells ffort." Accordingly, a bill taxing imported liquors and exported "Skinns and ffurrs" was introduced and passed for "appropriating the Publick money Raised and to be Raised for Building a ffortification at Southells ffort."

The building of Southell's fort led to a desire for further defensive works, so, late in 1696, a Committee, appointed "to Survey and Consider whether there be not A more Convenient place or places for fortifieing in Charles Towne, Than the place appoynted by act of Assembly," reported "that they wth: a Committee of y^e Upper House Did Survey and have Considered of the most Convenient place And it was y^e oppinion of the Majo^r part of the Committee, That the poynt of Sand to the northward of the Creeke commonly Called Collins his Creeke, is the Most Convenient place for fortifieing." Thus it was that, by 1700, Charleston had "a strong Fort, and regular Fortifications made to defend the Town."

In 1702, soon after the beginning of Queen Anne's War, Governor Moore of South Carolina urged an expedition against the Spaniards at Fort San Marco which was not at that time in a very defensible condition. Desirous of striking the first blow, he hastily assembled twelve hundred men, half of them Indians. Moore himself took four hundred soldiers to St. Augustine by sea, sending the remainder with all the Indians by land. The land forces, under Colonel Daniel, arrived in advance of the naval forces, and attacked and plundered the town. When Moore arrived the English invested the fort but were unable to take San Marco because the expedition lacked heavy artillery. Colonel Daniel was sent to Jamaica to procure some guns, but before his return, two Spanish vessels arrived at St. Augustine from Havana. Moore, becoming alarmed concerning

his situation, hastily raised the siege, which he had continued for three months, and abandoned his stores, armament, and munitions.

In 1706, while the war between England and France and Spain still raged in Europe, Governor Johnson was informed of a projected invasion of South Carolina by the Spaniards. He immediately strengthened the existing fortifications and built Fort Johnson, a small structure on James's Island, in which he mounted a number of guns. Hardly had this been done when five French vessels, carrying nearly a thousand French and Spanish troops, appeared off Charleston. The attacking force ascended the river and cast anchor just above Sullivan's Island, and about eight hundred troops landed and ravaged the country. The outraged people seized their arms and soon drove the invaders back to their vessels, after killing or capturing about three hundred men. Unable to force the surrender of the defenses, the fleet at last withdrew.

All this time North Carolina had been markedly indifferent to the necessity for coast defenses, but in 1712 a fort was ordered built on Core Sound, principally to overawe the Indians. This fort was named in honor of Governor Pollock.

Claiming that the Altamaha River fell within the boundaries of South Carolina, and desiring to secure the river and to control its navigation, King George I ordered Governor Nicholson to erect a fort at some suitable point. With a company of one hundred men, Nicholson selected a site at the confluence of the Oconee and Ocmulgee Rivers and constructed a fort which he named Fort George. The Spanish ambassador, arguing that the fort was built within Spanish territory, demanded that it be demolished, but no immediate action was taken. Shortly afterwards the fort was destroyed by fire and was insubstantially rebuilt at the expense of the colony, but within a few years the post was abandoned.

In 1720 it was reported that the "fort at Beauford is so much out of repair and the great gun carriages so rotten that the same is defenceless and of no service, whereby the families have no place of security in time of alarm." To satisfy the inhabitants, nine new gun carriages were ordered, but the fort received no repairs except such as may have been made by the people residing in the vicinity.

The scheme of government attempted by the Lords Proprietor of Carolina proved to be a failure, and their titles and interest in the Colony were sold to Parliament in 1729. At that time Carolina was considered to extend from the St. John's River on the south to Albemarle Sound on the north. This expanse of territory was deemed too extensive to be efficiently controlled by one government, so it was divided into the two territories of North and South Carolina, with the southern boundary of South Carolina set at the Savannah River. All the territory south of the Savannah was held in reserve by the Crown.

Robert Johnson arrived at Charleston early in 1731 as royal governor of the Province, and he brought with him seventy-four pieces of artillery sent to the colony by the king. The governor had been instructed to "build two good

Forts, one at *Port-Royal*, and the other upon the River Altamaha, betwixt which is the River Savanna." He set out promptly to "mark out the Land," and the appropriation act for 1731 contained an item of five thousand six hundred pounds "To his Majesty by loan for building a fort at Altamaha and a fort and barracks on Port Royal river," and another item of fifteen hundred pounds "survey balance due Alexander Pams." Additional money was appropriated in 1733 and 1734.

The lands to the south of the Savannah River were still unorganized and unsettled. James Oglethorpe, following a detail on a Commission to investigate the condition of jails in England, conceived the idea of a colony between the Savannah and Altamaha Rivers for the relief of the poor and indigent people of Great Britain. A charter was obtained in 1732 by a corporation, called the Trustees for establishing the Colony of Georgia, to which were granted all lands between the Savannah and Altamaha. In November, Oglethorpe embarked with one hundred and sixteen men, reaching Savannah in February, 1733. A small fort was at once erected on the banks of the river, and some guns were mounted for the defense of the new colony. In March, Oglethorpe wrote, "Our crane, our battery of cannon, and magazine are finished."

Since it provided a buffer between Carolina and the Spaniards in Florida, the new colony received a warm welcome from Charleston, particularly when it became evident that Oglethorpe was to be very active in the construction of coast and frontier fortifications. While the Spanish had made no attempt to establish settlements north of the St. John's River, they still laid claim to much of the territory lying within the grant to Georgia. Oglethorpe clearly saw the possibilities of conflict, and as soon as he had settled his colonists at Savannah, he made treaties with the Indians and then began the erection of fortifications.

After a personal reconnaissance of the shores and frontiers of Georgia, the governor commenced work on his defensive plans. The most important of his works was Fort Frederica, so-named after Frederick, Prince of Wales. In February, 1736, two hundred persons landed on St. Simon's Island to establish the settlement of Frederica, and by March they had a battery mounted and the fort almost completed. The main portion of the work was built of tapia (tappy or tabby), a concrete made of lime mixed with stones and sea shells. In shape, the fort formed a half-hexagon, with two bastions and two demi-bastions and towers at the point of each bastion. The curtains of earth faced with timber varied from ten to thirteen feet in height. A ravelin mounting 18-pounders faced the river, two bastions faced the landward side, and a wet moat surrounded the fort. The permanent garrison consisted of one officer, one sergeant, and three men. In the direction of the ocean, just beyond the parade ground and hidden from view from the sea, was a battery of twelve heavy guns commanding the entrance to the harbor.

On the south end of the island, seven miles from Frederica, was a small community called St. Simon's. Near it Oglethorpe built a small battery which became known as Fort St. Simon's. To control fully the entrance to Jekyl Sound,

another work was erected opposite St. Simon's on the northern end of Jekyl Island, where a brewery was established to make beer for the troops.

South of Jekyl Island, and fifty miles distant from Frederica, was Cumberland Island. On the northern side of the island Oglethorpe directed the construction of Fort St. Andrew, which had walls of wood, filled with earth and surrounded by a palisaded ditch. On the southern end of the island, Fort William was built to command the entrance to Amelia Sound.

As the most southern outpost of Georgia, Fort St. George was built on Point St. George at the mouth of St. John's River and on the site of the old fort. The detachments manning this fort were, however, withdrawn in 1739.

Other minor works and frontier forts were built in the colony. In 1735 a number of Highlanders founded New Inverness on the Altamaha, sixteen miles above St. Simon's Island, and built a fort mounting four pieces of artillery. A year later, a fort, also mounting four cannon, was built at Darien, ten miles from Frederica. Wormsloe, on the Isle of Hope, had a tapia fort built by Captain Noble Jones. Fort Wymberly was a wooden fort built by Captain Jones to command the inland passage between the Vernon and Wilmington Rivers, a route much used by slave-running and plundering parties of Spanish, Indians, and outlaws. For the defense of Skidoway Narrows, a timber fort called Jones's Fort was erected on Skidoway Island and garrisoned by a detachment from Captain Jones's company until 1738.

For the protection against hostile approach by way of St. Augustine Creek, a small fort was erected at Thunderbolt, but it was falling into decay as early as 1737. Fort Argyle was built at a narrow passage on the Great Ogeeche River, where the Indians were accustomed to cross on their forays into Carolina. Fort Barrington was on the Altamaha River. At Yamacraw, on the Savannah, a small fort was erected as a place of refuge. A fort was put up on the site of Augusta as a protection against the Indians.

The Spanish, uneasy because of Oglethorpe's activities, sent commissioners from St. Augustine to protest against these preparations and to demand the immediate evacuation of the whole of Georgia and of all South Carolina below Port Royal. Oglethorpe, of course, refused compliance, and the Spanish threatened him with war. Don Manuel de Montiano, governor of the Spanish settlements, had been improving his own situation. Upon his arrival in 1735 he had found St. Augustine without adequate defenses, Fort San Marco being dilapidated and its armament unserviceable. According to his own report in 1737: "The fort of this place is its only defense; it has no casemates for the shelter of the men, nor covert ways, nor ravelins to the curtains, nor other exterior works, that could give time for a long defense; but it is thus naked outside, as it is without a soul within, for there are no cannon that could be fired twenty-four hours." So he repaired and extended the defenses, heightened the ramparts, built a covered way, installed casemates and bomb-proofs, constructed redoubts, and threw up intrenchments about the entire city. A fort built on the northern end of Anastasia Island covered the entrance to the

harbor. For a garrison, there were about a thousand troops, including infantry, cavalry and artillery.

Oglethorpe found by 1739 that "The Forts I built were run to ruin, being mostly of earth, having no means to repair them," so, when war was declared in November between England and Spain, he felt, as had Sir Walter Raleigh, that the best way to occupy the Spaniard was to keep him busy in his own territory. With assistance from South Carolina and from the Indians in the vicinity, and with a naval force of four twenty-gun ships, he organized an expedition against St. Augustine. In May, 1740, he entered Florida with a force of more than two thousand English and Indians. His first conquest was Fort Diego, twenty miles from St. Augustine. Then Fort Moosa, within two miles of the city, surrendered; but when he appeared before the town and its fort and demanded a surrender, he was met with a defiant refusal.

Installing two heavy, two medium, and thirty light guns on Anastasia Island, Oglethorpe opened fire on the city and the fort with but indifferent success. So far as the fort was concerned, he found that "there are fifty pieces of cannon in the castle, several of which are of brass, from twelve to forty-eight pounds. It has four bastions. The walls are of stone and casemated. The internal square is sixty yards. The ditch is forty feet wide and twelve feet deep, six of which are sometimes filled with water. The counterscarp is faced with stone. They have lately made a covered way by embanking four thousand posts. The town is fortified with an intrenchment, salient angles, and redoubts, which inclose about half a mile in length and a quarter of a mile in width."

The small size of his guns precluded the possibility of making much of an impression upon the fortifications, and his small naval force was unable to enforce a strict blockade of the port. Supplies in sufficient quantity continued to reach the beleaguered garrison, so the occupants of the fort remained quietly within its walls and suffered no particular hardship. Becoming irritable, Oglethorpe alienated the Indians, who began to leave him; the Spaniards surprised and captured the outpost at Fort Moosa; sickness appeared in the British camp; and finally the English troops began to desert. Learning of the approach of some Spanish vessels, the governor became discouraged and abandoned the siege in July.

The ire of the Spaniards was aroused, and they, in turn, prepared to invade Georgia. In June, 1742, a large fleet, bearing about five thousand men appeared off the coast. Besides his forts, Oglethorpe had an armed schooner of fourteen guns, several armed sloops, and a force of about six hundred and fifty soldiers, Highlanders, indentured servants, and Indians.

On June 21, a demonstration by about a dozen Spanish vessels at the mouth of St. Mary's River was repulsed by the guns of Fort William, on Cumberland Island, assisted by the armed schooner, whereupon the Spaniards put in at Cumberland Sound. The governor then removed the men and guns from Fort St. Andrew and used them to reinforce Fort William, bringing them in two small boats through the Spanish squadron, "nor lost a single man."

PROPERTY OF U. S.

On July 5, favored by a strong easterly wind, a squadron of thirty-six vessels, including one ship-of-the-line of twenty-four guns, two ships of twenty guns, two large scows of fourteen guns, four schooners, four sloops, and twenty-three half galleys, entered St. Simon's Harbor. For four hours the 18-pounders of the fort and the 4-pounders of the water battery engaged the fleet, and at the end of this time the vessels passed on up the river. After a council of war, St. Simon's was abandoned, the guns spiked, and the garrison withdrawn to the northern end of the island to defend Fort Frederica in the attack which was to come. The Spanish then took possession of the unmanned and dismantled fort.

De Montiano prudently brought his fleet to anchor some four miles below the fort and landed his troops to attack from the landward side. The narrow road which Oglethorpe had constructed lay between an impassable morass and an almost impenetrable wood. The Spanish troops were therefore easily held, and a detachment of about three hundred was badly cut up in an ambushade. Finding that he was unable to reach Fort Frederica by land, De Montiano proceeded, with his galleys, against the town from the sea, but when his boats came within range of the fort, they were met by so heavy a fire that they were forced to withdraw.

On July 18, twenty-eight vessels appeared off Fort William, and fifteen entered the harbor to demand the surrender of the garrison. Ensign Alexander Stuart dramatically replied that neither would he yield the fort nor could they take it. The ensuing engagement lasted for three hours, at the end of which time the fleet drew off with two galleys disabled by the few 18-pounders which had been at Stuart's disposal.

In the meantime, Oglethorpe tried to accomplish by strategy what he could not accomplish by force. By allowing a false message to be intercepted, he led the Spanish commander to believe that heavy reinforcements were at hand and expected hourly. De Montiano hastily embarked his troops and set out for St. Augustine, chased out of the Sound by an enemy that dared not attack him.

In the short time he had been in the country, Governor Oglethorpe had firmly established his colony, with Savannah as its commercial center and Frederica as a strong southern outpost. He had pushed the boundaries of Georgia to the St. John's River, and had set up a strong barrier between Florida and South Carolina. As a result, the Carolinians began to neglect their coast defenses. As early as 1734, it was stated that Charleston had no fortifications capable of much resistance, for the works which had been built in that harbor had been much battered by violent storms besides having undergone the usual deterioration at the hands of time.

During the time Georgia and Florida were conducting their own little private war, the shores of the Carolinas were visited by Spanish cruisers. Attention was thus brought sharply to the undefended condition of the ravaged coasts, and from 1744 on for a number of years considerable thought was devoted, parti-

cularly in North Carolina, to coast defense. The Assembly at Newbern in 1744 discussed the erection of a fort at the mouth of Cape Fear River, on the site of Smithville. In 1745 it considered that "There is great Reason to fear that such Parts of the Province which are situated most commodious for Shipping to enter may be invaded by the Enemy," and appropriated money for their first attempt at coast defense in the erection of a Cape Fear fort large enough to contain twenty cannon. This fort was built and named Fort Johnston, but a subsequent scandal charged Governor Johnston with applying the funds to other uses and with hiring but two or three negroes to throw up a small parapet.

In 1747 "several small Sloops and Barcalonjos" from St. Augustine plundered the coasts at Ocracoke, Core Sound, Bear Inlet, and Cape Fear, and entered Cape Fear River and ravaged its shores. A large appropriation was thereupon made for the erection of forts at Ocracoke, Topsail, and Bear Inlets, and for repairing Fort Johnston. Some work was done at Topsail Inlet and a fort named Fort Granville was put up at Ocracoke, about the center of the North Carolina coast line.

Governor Dobbs wrote of the conditions of these works in 1756, that "upon my entring into this Province, I found . . . they had only raised one small square fort [Johnston] with 4. little bastions and a Fosse, the ramparts and Parapets of a Sandy earth faced with upright pines which were all rotten, in which they had only 6. or 7. small ship iron guns all honey-combed, 3. or 4. of which were 2. pounders and the rest 4. pounders and no garrison but 2. or 3. men to keep the fort and this was all the safety in the Province to defend the most navigable river in the Province, the river of Cape Fear. . . .

"The Assembly before I arrived had out of their new Paper Currency appropriated £2000. Currency to repair Fort Johnston on Cape Fear river, and had appropriated £2000. to be added to £2000. before granted to erect a Fort at or near Ocacock Bar, by which all ships must pass who trade to Neuse, Pamlico & Roanoak rivers . . . They had also appropriated £1500. Currency to erect a battery at old Topsail Inlet or Fort Beaufort, to defend that Harbour, there being deep water on the barr—But no step had been taken to erect any of them when I arrived."

He undertook "to finish Fort Johnston at Cape Fear . . . and to cover the Curtain and two Bastions next the river, which commanded the channel, with a wall upon a stone foundation made of cement, which they call here tabby work, composed of broken oyster shells, lime and sand, there being no stone to be had but what comes in ballast in ships—and also to finish the lower Battery on the Counterscarp." The counterscarp of the other curtains and batteries was to be temporarily palisaded. Fort Johnston would then require for its armament fourteen 18-pounders for the lower battery, sixteen 9-pounders to cover the river, and thirty swivel guns for the landward sides.

Dobbs also "Agreed to erect a Battery with two faces on Core Banks at Portsmouth, where one face wou'd play upon all Vessels coming in from the Bar, and the other scour the channel to the Harbour. . . . [Because of

storms] I thought it more prudent to erect a large battery upon Piles, and to raise it 5 feet above the usual spring tides, than to risque the building a Fort, and to build a strong House to defend the Battery." This work, when completed, would require eight 18-pounders covering the bar and twelve 12-pounders on the other side.

At the battery on Bogue Banks, at Fort Beaufort, the "house is already up and covering," and the battery was nearing completion. "It has also two faces, one which commands the entrance from the Bar and the other defends the Harbour." For this work, Governor Dobbs proposed eight 12-pounders to command the bar and six 6-pounders on the other face.

Forts Johnston and Granville were poorly constructed and proved to be of little service. They never had much equipment, and the expected attacks by the French never developed. Fort Granville was never entirely completed and was wholly abandoned by 1763; but Fort Johnston continued to be partially equipped until the end of the royal government, although its tapia work contained such a large proportion of sand that every time a gun was fired, large pieces fell out of the parapet.

Governor Oglethorpe left Georgia in 1743, and Frederica began to disintegrate. With the conclusion of peace the forts were allowed to decay and the troops were finally withdrawn. Upon his arrival in 1754, Governor Reynolds found the fortifications "decayed," and twenty cannon lying dismounted at Fort Frederica, "spoiled for want of care." By 1755 Georgia was almost defenseless, for "there was not a single good fortification in the province." In Savannah eleven old cannon, three and four-pounders without carriages, and twenty-seven swivel guns constituted the entire show of armament.

In compliance with instructions from the Board of Trade, Reynolds drew up an elaborate coast defense project which proposed four coast forts, located respectively at Frederica, Hardwick, Cockspur, and Savannah, to mount—

<i>Pdrs.</i>	<i>Guns</i>			<i>How.</i>	<i>Mortars</i>	<i>Regulars</i>	<i>Militia</i>	<i>Indians</i>
	<i>24-18</i>	<i>12</i>	<i>smaller</i>	<i>12-10</i>	<i>100-50</i>			
Frederica .	10	12	20	4	4	300	350	350
Hardwick .	5	6	10	2	2	150	150	150
Cockspur .	6	3	4	2		30	35	35
Savannah .	8	4	10	2	2	150	150	150

The fort at Frederica was to be a half-hexagon, with two bastions and two demi-bastions towards the land, and two demi-bastions towards the sea. At Cockspur (Fort George), the fort was to be triangular, with three demi-bastions, or a quadrangular blockhouse without bastions. The fort at Savannah was to be quadrangular, with four bastions, three on the bluff and one below.

In 1758, Governor Ellis of Georgia reported to the Board of Trade:

"Immediately after our Assembly rose I took a Journey to the South in order to examine into the state of things in that Quarter. On my way I touch'd at the River Ogeeche and saw the Fort that had lately been raised there in consequence

of the Resolutions of the Assembly last year. It is a Quadrangular Figure, each side measuring 100 yards, constructed with thick logs set upright, fourteen feet long, five whereof are sunk in the Earth, and has four little Bastions, pierced for small and great guns that would render it very defenceable. From thence I proceeded to Midway where I found the Inhabitants had inclosed their Church in the same manner, and erected a Battery of eight guns at Sunbury in a very proper situation for defending the River.

"I reached Frederica two days after^d, the ruinous condition of which I could not view without concern. A dreadful Fire, that lately happened there, has destroyed the greatest part of the town. Time has done almost as much for the Fortifications. Never was there a spot better calculated for a place of arms or more capable of being fortified to advantage. It lies on the west side of the Island St. Simon's, and the chief and most southern branch of the great river Alatomaha. The military works were never very large, but compact and extremely defenceable.

"The Sound will conveniently admit of 40 Gun Ships, and those of 500 Tons burthen may come abreast of the Town; but for three Miles below it the River winds in such a manner that an Enemy must in that space be exposed to our Fire without being able to return it. In short it is of the last importance that that place should be kept in constant Repair and properly Garrisoned, as it is apparently and really the key of this and the rest of the King's Provinces to the south, but the wretched condition in which it now is makes it easy to conjecture what would be its fate should Spanish war suddenly break out.

"From hence I went to the Island of Cumberland on the south point whereof stands Fort William, a Post of no less consequence, as is evident from the Defence it made against Twenty Eight Spanish Vessels and a considerable Land Force that Attack'd it unsuccessfully in the year 1742.

"General Oglethorpe has, in my humble opinion displayed a great deal of skill in his choice of such Situation.

"This Fort commands a noble inlet from the Sea,—the entrance of the River St. Mary,—which runs deep into the Country,—and the Inland Passage thro' which the runaway Negroes and other Deserters are obliged to go on their way to St. Augustine.

"The works are of no great extent but admirably contrived to be maintained by a small Garrison, and might be repaired without any great expence."

In Florida, work on Fort San Marco continued intermittently until 1756, when the defenses were declared completed. The fort, covering about an acre of ground, was a regular quadrangle, with four bastions, lying to the north of St. Augustine, directly opposite the entrance to the harbor. A moat, fifty feet in width, entirely surrounded the fort, and admission was gained from the south over a stationary way and a drawbridge. The gate was protected by a barbacon or ravelin. The curtain was about sixty yards in length, and the parapet was about twenty feet high and nine feet thick, casemated for quarters.

At each angle of the fort was a sentry-box, that at the northeastern corner being also a watch-tower, twenty-five feet in height.

The fort was built of coquina, a sea-shell concretion which is so largely used in Florida and which, soft when first quarried, becomes harder as it is exposed to light and air. Over the gateway was an escutcheon, bearing the arms of Spain, with an inscription setting forth that "Don Ferdinand, the VII., being King of Spain, and the Field Marshal Don Alonzo Fernando Hereda, being Governor and Captain General of this place, San Augustin of Florida, and its province, this fort was finished in the year 1756. The works were directed by the Captain Engineer Don Pedro de Brozas y Garay." The usual garrison consisted of three or four hundred regular troops. In 1763, when Spain ceded Florida to England, Fort San Marco became Fort St. Mark's; but when, twenty years later, England traded Florida to Spain for Jamaica, both names seem to have been used.

In 1758 an Act was passed in South Carolina reciting that Fort Frederick had gone to decay and that a new fort had recently been constructed near Beaufort and named Fort Lyttleton. The site of Fort Frederick was not described nor was that of the preceding fort, but it was probably on or near the site chosen for Fort Lyttleton, on the north bank of Port Royal River, a little below the town, where any vessel approaching Beaufort would have to pass under the guns. Fort Lyttleton was a *tapia* fort with two demi-bastions toward the river and one bastion toward the land, with a ditch surrounding the whole. Sixteen heavy guns were provided but had not been mounted by 1763.

A project for the defense of Charleston had been prepared and work had been begun during the troublesome times at the opening of the latter half of the century. Construction was, however, soon discontinued, and for a time the project lay dormant. Some work was performed later, and by 1763 the town was tolerably well defended. Toward the south and southeast, facing Cooper River, there were seven bastions or batteries, of which three were extensive. These batteries were connected by lines of earthworks with platforms mounting a hundred guns. About two miles below Charleston was Fort Johnson, on James Island, covering the channel at point-blank range. At this time the water battery mounted fifteen 18-pounders and five 9-pounders, but the fort itself was old and not in the best of condition. It had two demi-bastions and an outwork on the water side, all of them having platforms and cannon mounted.

Rumors of the passage of the Stamp Act spread through the American colonies early in 1765, and everywhere aroused bitter and violent opposition. In September a British sloop arrived at Fort Johnson in North Carolina with a shipment of stamps destined for that Colony. Colonels John Ashe and Hugh Waddell assembled their organizations and prevented the landing of the stamps from the sloop.

In February, 1766, two merchant ships arrived at Fort Johnston from Philadelphia with unstamped clearance papers, and were duly seized by the authorities. About five hundred and eighty men assembled under Colonel

Waddell, spiked the guns of the fort to prevent their use, and then forced the release of the two vessels. Similar incidents all over the country forced the repeal of the Stamp Act in 1766.

The differences between Great Britain and her colonies were, however, becoming irreconcilable and war was rapidly approaching. Like most of the colonies, Georgia and the Carolinas took no heed for the future, and not only did they not build new fortifications, but they neglected those which they had. Two or three years before the outbreak of the Revolution, there were scarcely any suitable forts between Chesapeake Bay and Florida.

At Savannah, Fort Halifax, built in 1759 and 1760 of earth faced with timbers, was dilapidated and, with the exception of two of its caponières, was totally unfit for service. Fort Frederica had been without a garrison since 1765 and, although some of its tapia walls remained from the construction work of 1762, the structure was rapidly becoming a complete ruin. Fort George, on Cockspar, with its mud walls faced with palmetto logs, was "almost in ruins, and garrisoned only by an officer and three men." Of Fort William, on Cumberland Island, and the other works previously erected in Georgia, scarce a vestige remained.

In South Carolina, matters were but little better. Fort Johnson, at Charleston, still retained some of its former power, but Fort Lyttleton, at Beaufort, had been neglected and was sadly in need of repair.

In North Carolina, Fort Johnston had a garrison of one captain, one sergeant, one corporal, one gunner, one drummer, and twenty-one men, and had fit for service eleven 18-pounders, sixteen 9-pounders, and seventeen ½-pounders, but the "said Fort was in no state of defence."

Not until the actual outbreak of war was any decisive step taken. The first action resulted from the determination of the popular leaders in South Carolina to take possession of Fort Johnson at Charleston. Colonel Motte was selected in July, 1775, to lead the expedition, but before he could assemble his body of provincials and land them on the island, the British forces dismantled the fort and withdrew to two armed ships in the harbor. Captain Heyward, with a detachment of Charleston artillery, occupied the fort and soon had three guns ready for action. With another party, Colonel Moultrie, before long, had some heavy guns mounted at Haddrell's Point by means of which he drove the British vessels out of the harbor. Forts were then constructed on James' Island, Haddrell's Point, and other places; batteries were raised at Georgetown and elsewhere; Charleston became a garrison; and Fort Moultrie was begun by Colonel Moultrie on Sullivan's Island.

In December, the Council of Safety of South Carolina directed the repair of Fort Lyttleton, and the erection of a fort at Dorchester, on the left bank of the Ashley River. This new fort was a square redoubt about fifty feet from the water, with demi-bastions at each of the four angles. The walls were built of tapia, three or four feet in thickness and seven or eight feet in height. The in-

terior line was about one hundred feet square. The fort mounted a number of small guns.

While these stirring events were occurring in South Carolina, Colonel James Moore and Colonel John Ashe, in North Carolina, assembled a body of provincials for the purpose of capturing Fort Johnston, on the Cape Fear River. The governor, fearing that the guns would be taken by the people, "had thought it advisable for the preservation of His Majesty's Artillery to dismount the Guns in the Fort and to lay them under the protection of the Guns of His Majesty's Ships of War and to withdraw the little remnant of the Garrison the shot and small Stores and to place them in security on board a Vessel." Colonel Ashe therefore, with no great difficulty, captured the fort and set fire to "all the buildings in the fort, which being of wood burnt like tinder."

General Charles Lee arrived at Charleston in June, 1776, to assume command in South Carolina. Disapproving of the plan for the defense of Sullivan's Island on the ground that the fort "could not hold out half an hour" and that "the platform was but a slaughtering stage," he wished to abandon the island, but President Rutledge would not consent. Fort Moultrie was square, with a bastion at each angle, and was built of palmetto logs laid horizontally in two rows about sixteen feet apart. The two rows were joined together at intervals so as to form a series of pens which were filled with sand. Only the southeast and southwest curtains had been finished, but the fort mounted thirty-one guns, including a number of eighteen and thirty-six pounders. About four hundred men under Colonel Moultrie were available as a garrison for the fort.

On the northeastern side of Sullivan's Island Captain de Brahme had erected breastworks mounting two guns, and about seven hundred and eighty men under Colonel Thompson were available for this station. Elsewhere but little work had been accomplished.

Before he could complete his fort, Colonel Moultrie was called upon to meet the enemy. On June 28, 1776, the British fleet under Sir Peter Parker, including two 50-gun ships, four frigates, and a number of smaller craft, advanced to the attack. Colonel Gadsden with his regiment was at Fort Johnson, Colonels Moultrie and Thompson were on Sullivan's Island, and the other troops under Lee were assigned to Haddrell's Point, James' Island, and the shore in front of the town.

Moultrie's fort received the first onslaught of the enemy when the ships *Bristol* and *Experiment*, fifty guns each, the frigates *Active*, *Solebay*, *Siren*, and *Sphinx*, twenty-eight guns each, the sloops *Thunderbomb* and *Ranger*, twenty-eight guns each, and the *Friendship*, twenty-two guns, pushed in and opened the engagement with a broadside. The heavy bombardment from the ships caused little damage to the soft, spongy palmetto logs, while the 13-inch shells from the bomb-vessel, anchored a mile and a half away, fell into the morass within the fort or into the loose sand. The fort, however, with a limited supply of ammunition for its sixty-four guns, fired deliberately and with a precision which told heavily on the enemy.

About noon, the *Sphinx*, *Active*, and *Siren* attempted to take up a position which would enable them to enfilade the front platforms and to cut off communication between the island and the mainland, but they all grounded on the shoal on which Fort Sumter was later built. The *Active* was abandoned and destroyed by her crew, but the others succeeded in getting off, although they were too much damaged to participate further in the action.

Firing ceased about half past nine o'clock, and at about eleven o'clock the fleet returned to its former anchorage, with the *Bristol* and the *Experiment* both seriously damaged in hull, masts, and rigging. The British casualties exceeded two hundred men, while the Americans lost twelve men killed and twenty-five wounded. Congress gave a vote of thanks to Lee, Moultrie, Thompson, and the officers and men of the command, and "South Carolina, by her president and common voice, spontaneously decreed that the post of Sullivan's Island should, for all future time, be known as Fort Moultrie."

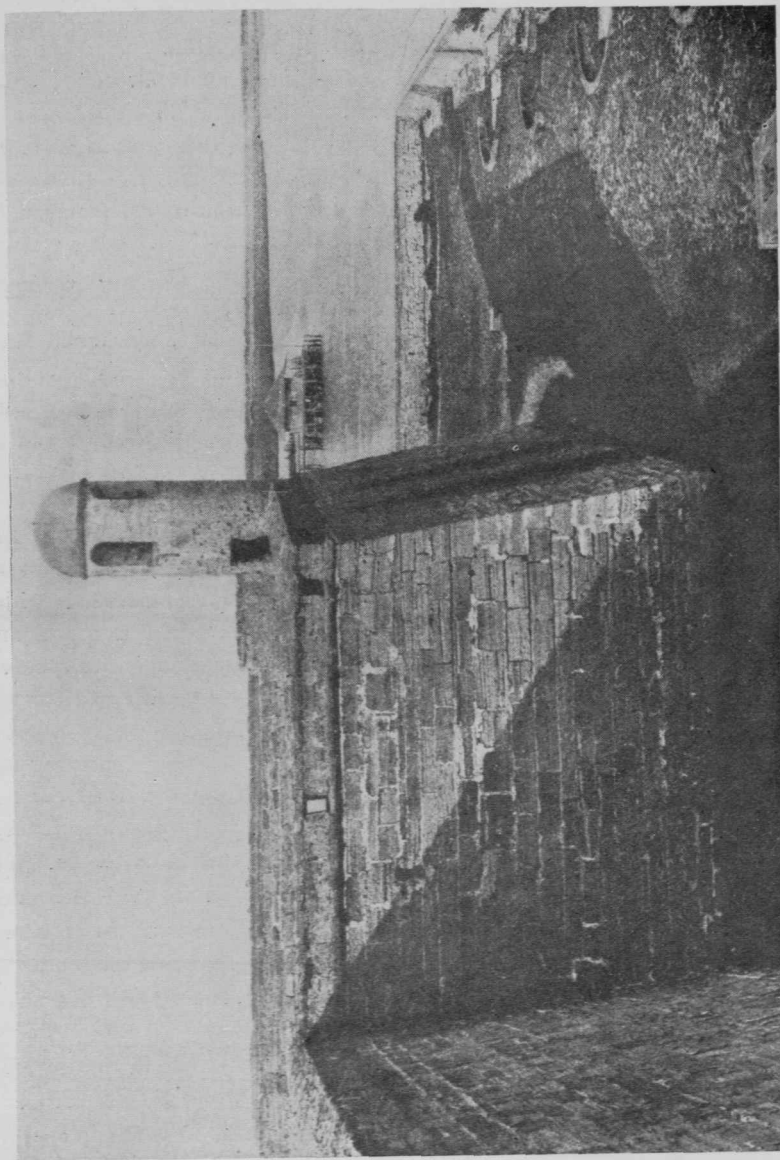
Georgia, in 1776, contemplated the erection of forts at Savannah and at Sunbury on the Altamaha River. Fort Morris was built on a bluff overlooking Midway River, about three hundred and fifty yards due south of Sunbury, in such a position as to cover the direct water approach to the town and also the back river. This fort was a substantial, enclosed earthwork, embracing a parade about one acre in extent. The eastern face, fronting the river was two hundred and seventy-five feet in length, the northern face one hundred and ninety-one feet, the southern face one hundred and forty feet, and the western curtain two hundred and forty-one feet. The guns were mounted without traverses, and a moat surrounded the whole fort. Sunbury had been previously protected when the Midway people, in 1757, in anticipation of an attack by French privateers, "raised a couple of batteries and made carriages for eight small cannon."

In November, 1778, Lieutenant Colonel Fuser, with vessels carrying same five hundred men, attempted to capture Fort Morris from the Americans, but learning that the British troops under Colonel Prevost had withdrawn from the vicinity, he refrained from pushing the attack and returned to the St. John's River, leaving some troops to occupy Frederica and to repair the fortifications. In January, 1779, Prevost returned to Sunbury and occupied the town. Placing batteries in position, he attacked Fort Morris; and Major Lane, unable to hold out, surrendered the fort and twenty-five guns. The name of Fort Morris was then changed to Fort George.

In January, 1779, a force of British troops from Savannah, under Major Gardiner, landed on Port Royal Island. General Moultrie assembled his militia and moved to protect Beaufort. The garrison at Fort Lyttleton failed to await his arrival, but spiked their guns and blew up the fort. This procedure was wholly unnecessary, for Moultrie succeeded in expelling the British from the vicinity of Beaufort. Fort Lyttleton was not reoccupied.

In September, 1779, Count d'Estaing arrived with his fleet from the West Indies to cooperate with General Lincoln in the reduction of Savannah. Pre-

vost, commanding the British army in the south, concentrated his forces for the defense of the city. On the twelfth, D'Estaing landed heavy cannon and about a thousand troops a few miles below the city. Eleven days later Lincoln



From Hammond's *Quaint and Historical Forts of North America* by permission of J. B. Lippincott Company
THE ANCIENT WATCH TOWER OF FORT MARION, ST. AUGUSTINE, FLA.

arrived, and the combined armies commenced the siege. It was soon apparent that the town must be taken by regular approaches, and to that end all energy was directed. A heavy bombardment which continued from the fourth to the ninth of October produced very little effect upon the British entrenchments.

At length D'Estaing became impatient of delay and notified Lincoln that the city must be taken by storm. Before sunrise on the ninth of October, the allies advanced to the assault. At one time it seemed that the works would be carried, but at length the allied forces were repulsed. D'Estaing, unwilling to renew the assault, retired on board the fleet, and Lincoln retreated to Charleston.

In April, 1780, the British again invested Charleston, at which time the city was defended by fourteen hundred men under Lincoln. On this occasion the fleet, under Admiral Arbuthnot, avoided a regular engagement with Fort Moultrie, and, with a favorable wind, ran by the fort, although Colonel Pinckney kept up a heavy fire with his batteries and caused considerable damage to the passing vessels. The successful passage of the forts rendered them of less use than the men who manned them, so the garrisons were withdrawn to the city and the forts were occupied by the enemy. Sir Henry Clinton, commanding the land forces of about five thousand men, disembarked and advanced up the right bank of the Ashley River. A siege was at once begun and prosecuted with vigor. The fortifications were beaten down, and Lincoln, dreading an assault, agreed to capitulate. Charleston was surrendered, and the garrison became prisoners of war. Clinton and Arbuthnot returned to New York, while Lord Cornwallis remained to hold the conquered territory with headquarters at Charleston.

At the close of the year 1781, the British forces in the south were confined to Charleston and Savannah, with Nathaniel Greene in the vicinity of Charleston and Anthony Wayne watching Savannah. Wilmington had been occupied by the British in January, but immediately after the surrender of Cornwallis at Yorktown, St. Clair marched upon Wilmington and the frightened enemy abandoned that post. Major Craig, the British commanding officer, and a few followers leveled the walls of the town and of Fort Johnston, and withdrew to St. John's Island, near Charleston.

On the eleventh of July, 1782, the British evacuated Savannah. General Wayne was appointed to "receive the keys of the city of Savannah" from a committee of British officers. Royal power had ceased in Georgia, but was still exercised in Charleston. That city was evacuated on the fourteenth of December, and on the following day was occupied by the Americans under General Greene. North Carolina, South Carolina, and Georgia had ended their colonial existence and had become states in the new Union, but Florida, like Canada, still remained a British colony.

In the treaty of Paris, signed September 3, 1783, England acknowledged the independence of the United States and surrendered all territory east of the Mississippi River and between the Great Lakes and Florida. This latter colony was restored to Spain. The United States thus became an active power among the nations of the earth.

Spain continued to maintain small forts near the northern boundary line of Florida, but no particular activity occurred until 1812. In that year the Spanish had a small garrison at Fernandina under the command of Captain Jose Lopez. Nine American gunboats entered the harbor under the pretence

of protection of American interests and drew up in a line with their guns bearing on the fort. Lopez, when approached by Colonel Ashley with a demand to surrender, had no alternative. On March 17, he lowered the Spanish flag, and on the following day Lieutenant Ridgeley, of the United States Army, assumed command of the post. Ashley then proceeded to Fort Moosa, a small fort two miles from St. Augustine, and captured it without difficulty. In June, Governor Estrada, of East Florida, sent schooner and two 'gunboats to attack the fort, whereupon the Americans, who had no artillery, retreated. In 1813, the American forces were withdrawn from this area.

The disputes between the United States and Spain ended in the treaty of Washington, signed in February, 1819, by which Spain ceded to the United States the whole of Florida and the adjacent islands. The name of Fort San Marco was changed to Fort Marion, in honor of General Marion of Revolutionary War fame. The country was created into a Territory in February, 1821, and the sovereignty of the United States was extended to include the whole Atlantic coast line, from the northernmost boundaries of Maine to the southernmost tip of the peninsula of Florida.

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Camouflage for Artillery

By LIEUT. A. E. WILSON, C. A. C.

IN a military sense camouflage is work done for the purpose of deceiving the enemy as to the existence, nature, or location of materiel, troops, or military works. It is simply counter-intelligence work designed primarily to defeat or to neutralize the means of intelligence provided the enemy by airplanes, captive balloons, and terrestrial observation. Deception of the enemy is the prime object. Provided the object seems a natural part of its surroundings, concealment is not essential.

There are three ways of gaining this deception: by suppressing all signs of abnormal activity near the object or deceiving the enemy as to the purpose of such activity, by making the object indistinguishable from its surroundings, and by making an object appear to be something else.

Observation is of two kinds, direct or indirect. The former is gained by direct vision, aided perhaps by field glasses or telescopes, from O. P.'s, airplanes, or balloons. The latter, which is by far the more dangerous, is gained by a study of aerial photographs. The camera is a most accurate witness and the skill of an expert photograph reader can hardly be realized.

As applied to artillery camouflage falls naturally under three heads: fixed defenses, railway mounts, and all other mobile artillery.

In the case of the fixed defenses the camouflleur is confronted with a most difficult situation; the large concrete amphitheatre, the smooth, well-kept slopes and numerous walks, all combine to make a position extremely hard to conceal. This can be and is being obviated to a certain extent by allowing the slopes to become overgrown by bushes and long grass, so hiding them from direct observation from the sea. The airplane still remains, and in this case we must depend almost wholly upon paint, as the position is obviously too large to hope to screen. Here the five-color system comes to the aid of the camouflleur. This system is the scientific blending of brown, yellow, cream, green, and mauve, with a narrow border line of black, the latter being used only to stop the line of vision. The mass of the position is apparently broken up into several fragments or masses by the use of ultra-visible colors in conjunction with colors that record no plane and this system also disguises the true character of the visible portions. By the correct selection and application of pigments the plane of the surface upon which they are applied may be made to appear in several different planes. Also the scientific selection of colors will defeat visibility and by chemical preparation of the pigments ray-filters are defeated. The object of this system is to resemble foliage, to compel the eye to record the portions painted green and brown and to fail to record the portions painted cream and mauve. Yellow is used only to counteract shadow. No attempt is made to

blend the colors. Thus the airplane is defeated for the reason that it acquires false information only. Even at very low altitudes the real facts are hidden by the five-color system.

The stereoscopic camera that detects falsely delineated perspective or pigment painted shadow is defeated by the use of opaque pigments for near planes and transparent pigments for far planes, by the use of mauve in juxtaposition with its complement, by yellow used to counteract shadow, by a scientific application of the laws of light and color, and by the camouflage of shadow.

The rose filter, which turns all green pigment to rose color and leaves foliage green is defeated by chemically prepared ray-proof pigments which alter the color waves and defy both eye and camera.

In order to break the shadow silhouette of the long gun, metal fins cut in the form of foliage and painted to blend with the color patches on the gun are bound to the gun; these will break the sky line of long guns and carry the eye away from the gun form. Thus, while concealment of permanent positions presents a difficult problem it is by no means insurmountable.

Next we come to the railway mounts. Here again the problem is difficult and complex. The camoufleur has not only the great size of the piece and mount to consider, but the many types of terrain. He must hide not only the gun itself but also the dumps and tracks leading to the position. In hiding the gun and its mount the five-color system again comes to his aid. In fact, so successful is this system that in photographs of railway mounts, taken at only 1200 feet directly over the position, it was not possible to find the guns although they stood on bare ground in an open tract with no covering other than the paint applied on them. Hiding the dumps and tracks is a different problem and must depend on the character of the terrain. It is obvious that a position in wooded or rough country is much more easily concealed than one in flat open country. In the first case it is possible to erect a screen over the work or, better still, any trees cut may be saved and re-erected by artificial means in their original position. The foliage may be replaced by dyed cloth or by fresh brush tied to the trees. Paths may be hidden by brush scattered on the ground though it will be much more effective if elevated on wires to about the height of a man. In any case it must be remembered that the means of concealment must approximate the photographic color displaced and that continuous upkeep is necessary.

With semi-permanent positions, such as the 240-mm., the same care must be taken as is the case with the railway. Since the enemy is going to know very shortly the approximate location of any heavy battery and will cover that locality very carefully to find that position, we must give him something to find. Here the dummy position is most valuable. It must not be obvious or he will pass it up; it must be constructed with just slightly less care, or, you might say, more care, than the actual position as the enemy is to see what you wish him to see and no more. A good camouflage maxim is, "Make your dummies at the same time or before your real positions."

In the camouflaging of positions for lighter mobile artillery, many methods are more or less familiar to all artillerymen. The most common of these methods is the use of the camouflage screen or net. Here we have also the three-color system which, while failing utterly when applied to large masses like the railway mount, is satisfactory for use with the smaller types. This is a use of green, yellow, and cream in small irregular patches separated by heavy black masses also in irregular shapes. The method of treating the problem with this is an endeavor to hide the piece by blending its form and shadow with the landscape. In other words it is an attempt to copy nature who gives so many birds and animals a protective coloring that they may blend with their surroundings. In camouflaging the lighter positions it is doubtful that the artilleryman will have the aid of the camoufleur beyond the furnishing of material. Therefore there are a few essentials which must be remembered: first, so conduct the installing of the battery as not to change the aspect of the locality, or at least make any change so irregular that it will not attract notice; second, avoid straight lines and above all avoid right angles; third, colors which match to the eye do not necessarily match photographically, and it is therefore safer to place the battery in a position where more than one color exists and then hide it under a broken colored covering so that the exact shade of color is unimportant; fourth, material lying flat photographs light while that standing on end is full of shadows and photographs dark; fifth, due to the height from which aerophotos are taken the work must be planned on a scale in proportion to that distance; sixth, keep only enough personnel and material at the position to fire the guns; seventh, maintain camouflage by strict discipline.

It is well to bear in mind that properly conducted camouflage measures conserve men and guns; they also permit undisturbed and therefore effective fire. Too much care can not be given to the choice of a position for on this choice depends the amount of labor and material necessary to carry out the camouflaging effectively. A position having natural cover is of course the best, but often this is not possible and then is when the greatest care must be exercised. However, the seeking of cover must not be carried to extremes, as it would be as safe to leave a battery standing in an open field without camouflage as to put it in the only patch of woods within miles. Overhead cover is not necessary but broken ground is at a premium. Wherever possible positions should be on or near existing roads, as new roads or trails are very hard to hide. On the other hand a crossroad should be avoided as it in itself will draw fire. At times positions will have to be selected in open country; then great care must be exercised. Scatter the guns, be sure that camouflage covering fits the ground lines, and maintain strict discipline. The enemy will not be perfect and may miss you for some time. Or the entire battery may be placed under a single covering, this takes more time and material but has the advantage of all interbattery trails under cover and a certain amount of movement is permissible.

A ploughed field is one of the last places one would expect to find a gun position, yet the Germans had a camp in a ploughed field, one hundred and

twenty yards square, a cover being built for the entire field and sloping very gradually from the center to all sides thus doing away with shadows and giving no indication that it was false.

Where the situation is stabilized one or more alternative positions should be selected and prepared so that when the enemy locates one position a prompt move can be made to another. The nature of the work to be performed by antiaircraft artillery is such that it will need little or no camouflage, for in nearly every case the enemy will devote his attention to the position or work being covered by the antiaircraft guns. However, where positions and lines of defense are being prepared secretly and the presence of antiaircraft gun positions would indicate the proximity of important works they must be concealed.

In summary, the following points should be stressed:

- First: Select your position with great care, one with natural material available being preferable whenever possible.
- Second: Make a sketch of what you think the position would look like in an aerophoto and so conduct the work that the general aspect is changed as little as possible.
- Third: Use existing roads and paths whenever possible.
- Fourth: Locate kitchen, latrines, etc., away from the guns.
- Fifth: Use natural material to the greatest possible extent, remembering that brush is the best and most important camouflage material.
- Sixth: When your camouflage is completed the real work is just beginning for the most important and most difficult task is the maintenance of camouflage discipline.

"Only prejudice or ignorance, or a deliberate desire to attract attention can be responsible for the attitude of a person who claims that our military establishment in time of peace is an expense disproportionate with the wealth of our nation. As long as wars are probable, military forces are a reasonable insurance." Richard Stockton, Jr., *Peace Insurance*, p. 22.

Morale in Armies

By MAJOR F. A. HAUSE, C. A. C.

MORALE is a word not easy to define in the English language; perhaps the best definition is the following: "A state of mind with reference to confidence, courage, zeal, and the like, especially of a number of persons associated in some enterprise, as troops."

Modern conditions of war are gradually extending the domain of morale and increasing its influence. For, among belligerent nations, war affects a greater number of people and does so with methods of increasing violence. The experience of the war has been a practical demonstration of the fact that morale is as potent a factor in the industrial army as in the military.

All successful commanders have recognized the tremendous value of mental forces in war. History is full of examples. Napoleon said, "In war the moral is to the physical as three is to one." Sherman said, "An army has a soul as well as a man." Foch wrote, "Ninety thousand conquered men retire before ninety thousand conquering men only because they have had enough, because they no longer believe in victory, because they are demoralized at the end of their moral resistance." Marmont wrote of "The mysterious forces which lend momentary power to armies, and which are the key to the reasons why at times one man is equal to ten and at others, ten are worth no more than one." The French drill regulations say, "The moral forces constitute the most powerful factors of success; they give life to all material efforts and dominate a commander's decision with regard to the troops' every act." A prize fighter summarized the same idea in a few words, "A man is licked when he thinks he is."

Morale is the very soul of the soldier. It makes an army as keen in attack, as valiant in defense. It is bold and even enterprising to say to any and every opportunity, "I can," but it does not stop here but adds "I will." Nor does it stop here, because for it the sad chasm between knowing and even willing and doing is completely bridged, so that the man of morale "does it now."

The soldier may be trained what to do in the melee, how to shoot from the hip without aiming, how to stab and withdraw his bayonet, how to club, hit, gouge, and strike for sensitive parts, and all this is a great help; but in a mortal scrimmage of man against man, where each is beyond the control of officers and is thrown upon his own personal resources for initiative—here it is that condition wins and the lack of it means death. Here the soldier fights with all that he ever was or did. Here, other things being anywhere nearly equal, it is the morale that decides. Only high morale, too, can make the fighters good losers. The no less cardinal trait of morale is thus how it takes defeat and retreat, and especially how it bears up under long bombardments or how much shelling can be endured without succumbing to shell-shock. Here the

only salvation is in the alleviation of grim, passive endurance, which only condition can supply, for it alone makes diversion, physical and mental, possible and effective, and it is it also that makes of this long and inactive exposure to danger a method of stealing the will and resolve to fight the harder when the time for it comes.

The factors affecting the morale of troops broadly fall into three classes:

- a. Those pertaining to the military service.
- b. Those in civilian communities adjacent to the camp or post.
- c. Those in the home of the individual man.

The positive factors raise spirits and fighting efficiency; the negative factors undermine and lower them. Therefore, the state of morale is merely the expression of degree of difference between the factors of plus and those of minus.

I have referred to the morale of the individual. The morale of a unit or organization is built up on that of the individuals composing it. The creation of high morale is not a thing easy to accomplish but is a product of careful leadership. It is as sensitive as a delicate flower and may be destroyed by a thoughtless word or an imprudent act. A noted example of a mistaken effort to create a fighting morale in an army is the address of General John Pope to the officers and soldiers of the Army of Virginia on his assumption of command of that army. He said in part:

I have spent two weeks in learning your whereabouts, your condition, and your wants; in preparing you for active operations, and in placing you in positions from which you can act promptly and to the purpose.

I have come to you from the West, where we have always seen the backs of our enemies—from an army whose business it has been to seek the adversary, and to beat him when found, whose policy has been attack and not defense.

In but one instance has the enemy been able to place our Western armies in a defensive attitude. I presume that I have been called here to pursue the same system, and to lead you against the enemy. It is my purpose to do so, and that speedily.

In modern war, the spirit of troops seems sensitive to outside influence as never before. This is probably due in part to longer periods of waiting and tension. It is also due to better means of communication and higher degree of literacy, whereby the men are better informed as to conditions at home and what is going on about them. Battle conditions are watched and interpreted in the light of experience for the results they may forecast, and as these are favorable or not the morale is correspondingly affected. This spirit is a quality of the human element in war. Its stimulation and control are problems of understanding and management. Curiously enough, while military literature is full of references to the psychological factor in war, they nearly all relate to its abstract importance and throw little, if any light on its practical application to war problems. History shows morale as an essential factor the scientific study of which has in the past been neglected, while its problems have been left to the individual to solve unaided as best he might. The results were naturally variable and imperfect.

The comfortable idea that the old army was good enough is not borne out by facts. No better evidence is needed that something was lacking in the spirit of the old army than the great number of desertions and refusal to reenlist in time of peace, and of the absentees in time of war—the Revolutionary and Civil Wars, for example. It is true that certain results were ultimately achieved. It is also true that better results could have been accomplished in less time and at smaller cost if the full power of mental force had been expended.

A long war is habitually decided by “staying power,” which is one of the expressions of morale. As Clemenceau prophesied of the war, “The side that holds out for the last quarter of an hour will win.”

Even when a military force or nation is tremendously outclassed by overwhelming superiority, it will put up a sturdy resistance through high morale. The latter adds stupendously to the price an overwhelming enemy of only fair morale must pay for victory. The spirit of the Swiss, quite as much as their armed force, deterred invasion.

The lack of qualities of morale in our best fighting divisions in the early days of the war, their tardy appearance in other divisions, and their absence in still others may be accounted for, in part at least, by the failure on the part of our leaders to realize their importance before the war began. This must not be forgotten in the future so that human lives may not needlessly be lost in the early battles of our next war. The morale of organizations such as divisions and lower units is founded on sympathy among its personnel and between its personnel and its commander. A high state of morale cannot exist without this sympathy. To be sympathetic, a commander need not be weak, for sympathy and firmness are in no way incompatible.

In the World War, defeat was measured not by the miles of territory yielded, but by how the courage and confidence of the troops endured. For more than four years the Germans, according to the map, had won. Their defeat was due to their inability to break the spirit of the defenders of France and Belgium. When they found they could not win, their morale dwindled. By their acceptance of failure and offer of an armistice they set allied victory forward by a year and rendered the use of the preponderating force of the Allies unnecessary. Morale broke before the army was physically crushed—it was merely psychologically beaten. General Ludendorff says: “The results of the further fighting depended mainly on the maintenance of the men’s morale.”

The Germans had what might be called “materialistic morale” to a high degree as a result of carefully cultivated egotism by which as a people they had come to regard themselves as supermen. They craved power and the material things of life. Posing as exponents of “Kultur,” they were apostles of the most sordid materialism the world has ever seen. Faith in the justice of their cause was probably a lesser motive than their code that “might takes right,” which also removed all moral obligations in respect to conduct against opponents.

General Pershing, in his report, speaks of two minor French attacks as being “characterized by most careful preparation to insure success in order to

improve the morale of their troops." And of the attack on the Marne salient he said: "But, more important than anything else, it would restore the morale of the Allies and remove the profound depression and fear then existing." Speaking further he says of the Allies: "Discouragement existed not only among the civil population but through their armies as well. Such was the Allied morale that although their superiority on the Western front during the last half of 1916 and during 1917 amounted to twenty per cent, only local attacks could be undertaken and their effect proved wholly insufficient against the German defense."

When the French Government took up the matter of reorganization after the recent war, they gave serious consideration to the study of measures for the avoidance in future of such frightful losses of men as had been sustained, especially by the infantry. Prominent among measures for the purpose given consideration were increases of the heavy fighting arms—artillery, tanks, machine guns, and flyers. This increase in the heavy arms resulted in a corresponding decrease in the lighter arms. The reduction fell wholly on the infantry and cavalry, the argument being that since the infantry suffered the heaviest losses, losses could be reduced if the number of individuals exposed were diminished, the cavalry being considered as of questionable value in future wars.

The infantry was reduced by the reduction of the number of regiments and of individuals bearing rifles, with the provision of more assistance from other arms and placing it more under the protection of other arms, especially the artillery. Thus arose the controversy, "Shall materiel overcome morale," the net result being that discussions and especially those appearing in the military professional press induced the French government to modify some of its enacted and proposed measures on the subject.

In conclusion, I might say that every method known to science is used to perfect military materiel; but materiel is useless without personnel trained in its operation. In turn, personnel in an army is useless unless it be animated by proper spirit. Flaw in morale is more disastrous than defect in materiel. Success may be won by the poorly equipped, but victory never crowns an army disbelieving in itself and without the will to win. Therefore it is as important to arm the mind as it is the body. Materiel things do not win wars. Men win wars—these things merely help them. The quality of the men behind the guns determines how efficiently the guns are served, or even if they are served at all.

Patriotism and love of country are the basis of military morale. It makes no difference whether we are dealing with the soldier, the high command, the nation, or the government, war demands an ever-increasing share of moral forces whose close union and wise combination are alone capable of producing victory.

EDITORIAL

The Journal

THIRTY-EIGHT years ago this month the COAST ARTILLERY JOURNAL made its first appearance as the *Journal of the United States Artillery*. There had long been felt a need in the artillery service of the United States Army for a professional periodical which would afford an opportunity for officers of the Artillery to exchange opinions and to keep in touch with artillery developments—particularly in the fields of fire control and gunnery, which were then, as now, of outstanding interest to artillerymen.

Through the activities of some of the more energetic of the young officers at Fort Monroe in 1891, and with the assistance and approval of the Commandant of the Artillery School, the *Journal of the United States Artillery* made its first appearance in January, 1892. This first Journal was a quarterly of eighty pages, and for a number of years it was highly technical in character, devoting considerable space to fire control, explosives, gunnery, and armor attack. Later, ballistics became a dominating feature, but since the World War tactics, history, and articles of general interest have made the JOURNAL much less technical, although gunnery, fire control, and materiel still have a place in its pages.

Conservation being more or less a military characteristic, the JOURNAL has made few changes in its physical appearance during the past thirty-seven years. As the size of the corps increased, the JOURNAL became first a bi-monthly, and finally a monthly, and it increased the number of pages to its present average of one hundred and twelve. For many years it appeared with a red cover, but the difficulty in securing a satisfactory red at a reasonable price immediately following the last war caused the adoption of the cover with which present readers are familiar. Only once has there been a change in size; the first numbers were $5\frac{3}{4}$ "x $8\frac{1}{2}$ " in dimension, but in 1896 the pages were made to measure six by nine inches.

This month the JOURNAL goes back to the red cover—a change which we trust will be welcomed by its readers. The new format is adopted with a certain degree of reluctance, but it is dictated by matters of administration and policy and leads to economies which are necessary and which cannot otherwise be obtained. We hope that the changes will meet with approval. In any case, material on up-to-date topics already secured for forthcoming numbers indicates that there need be no fear concerning the quality of the contents and that the JOURNAL will be able to live up to the old slogan: "Bigger and Better."

PROFESSIONAL NOTES

Coat of Arms for the Harbor Defenses of San Diego

Shield: Azure, a pile raguly or.

Crest: On a wreath of the colors or and azure an anchor proper (grayish) behind an eight pointed mullet of rays or.

Motto: *Paratus* (Prepared).

The blue shield and the yellow pile are symbolic of the blue ocean and the yellow land of Point Loma. The place was first visited by the Spaniards, Cabrillo in 1542, and the edges of the pile are made raguly (ragged) as the Spanish flag at that time bore a cross.

The crest symbolizes the hardest fought battle of the Mexican War in California, near San Diego, at San Pasquale, December 6, 1846. General Stephen W. Kearny commanded the Americans, consisting of one company of the First Dragoons, a few sailors sent by Commodore Stockton from San Diego, and a volunteer company from San Diego. The anchor commemorates Stockton's sailors, and Kearny's Dragoons wore on their helmets the eight-pointed gold star of rays.

Policies Governing the Selection of Students for the Army War College and the Command and General Staff School, 1929-1930

1. *a.* The number of students that will be detailed to commence a course of instruction at the Command and General Staff School in September, 1929, will be as follows:

Combatant Branches	100
Non-combatant Branches	10
To be selected by the Secretary of War	10
Total	120

Students will be selected—

(1) Normally from officers of field grade who will be less than 50 years of age September 1, 1929;

(2) From captains who on October 1, 1928, were among the first thousand on the promotion list and who on September 1, 1929, will be less than 58 years of age;

(3) From captains below the first thousand on the promotion list on October 1, 1928, who are particularly qualified for higher training and who on September 1, 1929, will be less than 45 years of age. The number of officers selected from this group shall not exceed 10% of the total quota authorized any branch.

b. All officers recommended for the detail must possess those qualifications which will make them suitable for higher command and General Staff Training.

c. If any branch is unable for any reason to furnish its full quota of student officers report of that fact will be made and the shortage apportioned to other branches.

d. In any case in which recommendation is made for the detail of an officer who has completed the course of the School of the Line, the General Staff School, or the Command and General Staff School, the Chief of Branch concerned will submit with such recommendation a brief statement of the reasons therefor.

e. The Air Corps, due to the fact that it has a much smaller percentage of graduates from the Command and General Staff School than any other combatant branch, has been

first awarded 3 of the 100 vacancies allotted to the combatant branches, then the remaining 97 vacancies have been apportioned to all of the combatant branches, including the Air Corps, in the manner prescribed in paragraph II of memorandum to Chiefs of Branches, dated November 1, 1927 (AG 210.63—9-28-27).

f. The apportionment of students to each of the combatant branches will be as follows:

Infantry	39
Cavalry	11
Field Artillery	18
Coast Artillery	12
Engineers	7
Air Corps	10
Signal Corps	3
	<hr/>
	100

g. The apportionment of students to each of the non-combatant branches will be as follows:

Adjutant General's Department	1
Quartermaster Corps	3
Judge Advocate General's Department	1
Finance Department	1
Medical Department	2
Ordnance Department	1
Chemical Warfare Service	1
	<hr/>
	10

2. a. The number of students that will be detailed to commence the course of instruction at the Army War College in September, 1929, will be as follows:

Combatant Branches	55
Non-combatant Branches	10
To be selected by the Secretary of War	10

Students will be selected from officers—

- (1) Of field grade;
- (2) Normally from those who will be less than 52 years of age on September 1, 1929;
- (3) Who are not graduates of the Army War College;
- (4) Who have an efficiency rating of at least "excellent";
- (5) Who are considered by their respective Chiefs of Branches as possessing those qualifications that would justify their training for higher command and General Staff duty.

b. In exceptional cases only will officers be recommended for the detail whose names are not borne on the General Staff Corps eligible list. When an officer is recommended for the detail whose name does not appear on the list, notation of that fact will be made, together with a statement of the reasons why the detail is recommended.

c. At least 50% of the quota from each Branch will consist of officers who upon graduation from the War College will be available for detail to the War Department General Staff.

d. In considering the qualifications of prospective candidates, Chief's of Branches take into consideration the increased emphasis now being placed upon the command course.

e. If any Branch is unable for any reason to furnish its full quota of student officers, immediate report of the fact will be made to The Adjutant General.

f. The apportionment of students to each of the combatant branches will be as follow

Infantry	21
Cavalry	7
Field Artillery	9
Coast Artillery	8
Air Corps	4
Engineers	4
Signal Corps	2
	<hr/>
	55

g. The apportionment of students to each of the non-combatant branches will be as follows:

Adjutant General's Department	1
Quartermaster Corps	2
Judge Advocate General's Department	1
Finance Department	1
Medical Department	2
Ordnance Department	2
Chemical Warfare Service	1
	<hr/>
	10

h. A list of alternates arranged in order of priority of selection will also be submitted, the number of alternates being equal to at least 50% of the Branch quota.

Extracts from Annual Reports

Actual Strength of the Army on June 30, 1928. The actual strength of the active Army of the United States on June 30, 1928, by classes of personnel, was as follows:

Commissioned officers:

Regular Army (active list)	11,872
Philippine Scouts (active list)	94
Retired Regular Army, on active duty	133
Retired Philippine Scouts, on active duty	13
	<hr/>
Total commissioned officers	12,112

Warrant officers:

Regular Army (active list)	1,208
	<hr/>

Enlisted men:

Regular Army (active list)	114,757
Philippine Scouts (active list)	6,400
Retired Regular Army, on active duty	28
	<hr/>
Total enlisted men	121,185
	<hr/>
Grand total	134,505

In addition to all of the foregoing, there were 699 Army nurses (509 regular and 190 reserve), 33 contract surgeons, and 878 United States Military Academy cadets, making altogether 136,115 individuals in the military service of the United States on that date.

Of the 134,505 commissioned officers, warrant officers and enlisted men in the military service on June 30, 1928, a total of 96,366 were serving in the Continental United States, 14,083 in Hawaii, 8605 in the Canal Zone, 310 in Alaska, 1282 in Porto Rico, 11,343 in the Philippine Islands, (including 6486 officers and enlisted men of the Philippine Scouts), 979 in China, 7 in Europe (attached to the Graves Registration Service), and 1530 were either en route from one country to another, on leave of absence, or were serving as military attachés in various foreign countries.

Sources of appointment of commissioned personnel. The following statement shows the sources of appointment of the 11,966 Regular Army and Philippine Scouts officers in service on June 30, 1928:

<i>Status at date of appointment</i>	<i>Number in service</i>
Civil life*	3428
Graduate of United States Military Academy	3544
Enlisted man, Regular Army	1119
Officer, National Army	253
Enlisted man, National Army	275
Officer, Reserve Corps	2184
Enlisted man, Reserve Corps	205
Enlisted man, National Guard	271
Volunteer officer	43
Volunteer enlisted man	16
Officer, National Guard	331
Warrant officer, pay clerk, Army field clerk, or field clerk, Quartermaster Corps	48
Contract surgeon or veterinarian	144
Retired officer restored to active list	16
Retired enlisted man	1
Public Health Service	1
Revenue Cutter Service	1
Coast and Geodetic Survey	2
Flying cadet	68
Officer, Philippine Scouts	16
	<hr/> 11,966

* Includes, in addition to those who had no previous military service, men who have had service during the War with Spain, the World War, or in the Regular Army but who were separated from the service and returned to civil life prior to their present appointment in the Army.

DEVELOPMENT OF TYPES OF EQUIPMENT

Coat, trench. Upon the recommendation of the Quartermaster Technical Committee there is now under development at the Philadelphia Quartermaster Depot, a garment of the type known as the "trench coat," for use under combat conditions. Samples have been furnished and they are now under consideration by the Infantry, Cavalry, Field Artillery, and Coast Artillery Boards.

Cords, hat, Rayon. A test is now being made of Rayon hat cords as a substitute for the cotton cords now being issued.

Hats, service. In an effort to arrive at a substitute to be used in emergency for the campaign hat, consideration has been given and tests made of numerous types of hats and caps, but so far no satisfactory substitute has been developed. There is now being purchased a number of hats made of domestic fur, which hats will be tested in the near future.

Leggins, canvas, spat type. A test of canvas leggins has recently been completed. The type tested was recommended for adoption for use by all dismounted troops, and that the development of a more satisfactory foot strap be continued. This recommendation was disapproved by The Adjutant General until such time as a more satisfactory foot strap is developed.

Raincoats. A test of the alligator type of raincoats is now under way by the Infantry, Cavalry, and Field Artillery Boards, with a view to its adoption for use in the United States.

Shirt, olive drab (with shoulder loops). Upon the recommendation of the Chief of Cavalry, consideration has been given to the adoption of shoulder loops on the olive drab shirt to prevent the cartridge belt from slipping off the shoulders of mounted troops. It is believed, however, that this difficulty can be overcome to a great extent by lessening the

distance between the keepers on the cartridge belt suspenders. Further action has been deferred pending completion of a test of the suspenders modified as indicated.

Cotton caps. The question of the adoption of a cotton service cap to replace the campaign hat, for troops serving in Panama, is now under consideration.

THE CHIEF OF FINANCE

Claims of the United States Against Germany for Reimbursement of the Cost of Maintenance of the Army of Occupation in Germany

Balance due United States on June 30, 1926	\$233,141,247.42
Paid to June 30, 1927, under Article 3, Finance Minister's Agreement of Jan. 14, 1925	\$ 8,919,849.17
Paid to June 30, 1928, under Article 3, Finance Minister's Agreement of Jan. 14, 1925	13,637,866.07
German Government claim respecting requisitioned coal, credit allowed, Jan. 14, 1928	756.33
	22,558,471.57
Balance due United States on June 30, 1928	\$210,582,775.85

THE CHIEF OF ENGINEERS

Seacoast Fortifications. Operations under seacoast fortifications during the past year have consisted, in general, of the study and preparation of plans for defense projects, the preparation and issue of fire control and other fortification records, the dissemination of data for the movement of railway artillery, the continuation of construction for the emplacement of major-caliber armament in the Panama Canal Zone, the development and test of searchlight equipment, and the maintenance of harbor defenses in the Continental United States and the Insular and Panama Canal Departments.

The studies and preparation of plans for defense projects consisted in collection and coordination of data showing physical characteristics of railroads, in studies in connection with location of guns in the major armament program of certain seacoast areas, and in numerous other studies and plans. Engineer construction included emplacement of 16-inch guns and secondary armament, gun block and connecting spurs for railway artillery, installation of harbor defense searchlights and fire control systems and the construction of wharves, military roads, and trails. The development of antiaircraft searchlights and accessories has progressed satisfactorily. As a result of field tests several minor improvements in the 1925 searchlight have increased its efficiency. During the year a number of searchlight units were purchased and delivered to the service in the Continental United States, Hawaii, and Panama.

THE CHIEF OF ORDNANCE

Experimental and Development Work and Manufacture of New Materiel

Rifles. The development of a pistol-grip stock for the service rifle has culminated in the approval of a type known as the modified type "C", which appears to be satisfactory to all using services. The development of receiver sights has continued, and types are now under test by the Infantry and Cavalry.

Antiaircraft Machine Guns. Considerable investigational work has been devoted to the improvement of the functioning of the caliber .50 antiaircraft machine gun. Other developments have continued actively during the year, notably among these being an improved type of buffer.

Antiaircraft Machine-Gun Mounts. A new type of tripod mount, standardized during the preceding year, has been procured in some quantity, in order to supply current needs. A pedestal mount, to carry four caliber .50 antiaircraft machine guns, is being designed and is expected to be placed in production shortly. This design embodies, as nearly as may

be, the changes which tests during the Antiaircraft Exercises at the Aberdeen Proving Ground during the fall of 1927 indicated as desirable.

Army Artillery. The 155-mm. gun carriage 1920, which mounts interchangeably either the 155-mm. gun or the 8-inch howitzer, has been modified as recommended by the Field Artillery Board; it is being retained by the Board for further tests. As a result of service tests, studies of a new unit of this type of materiel will be inaugurated.

Antiaircraft Materiel. Pursuing further the development of the light mobile antiaircraft gun mount laid down by the Caliber Board, a 3-inch antiaircraft gun mount T1 and gun T1 have been designed and manufactured. Tests were conducted at the Aberdeen Proving Ground, as a result of which the gun and mount were approved as standard for manufacture. Three new guns and mounts, designated M1, embodying slight modifications, are under manufacture and will be given further tests.

The instrument trailer T1 which was manufactured last year and tested during the antiaircraft exercises, will be subjected to further tests.

As a result of the satisfactory performance obtained in the firing of the 3-inch antiaircraft gun mount, M 1918, by Case III at the Aberdeen Proving Ground, a number of these mounts in service will be equipped as soon as practicable with Vickers azimuth elevation, fuze-setter receivers, and continuous fuze setters.

Tanks. Design and development work during the year has been limited principally to the medium tank T1, the light chassis T1, and the light tank T1E1, with cargo carrier based on the design of the latter chassis. The pilot chassis was completed early in the year and tested at the Aberdeen Proving Ground. Four light tanks and two cargo carriers (for Infantry and Cavalry) have been manufactured and are now at Fort Leonard Wood for test in connection with the operation of the mechanized force. The new medium tank T1 was completed during the year and tested by the Ordnance Department at the Aberdeen Proving Ground and by the Infantry (Tanks) at Fort Leonard Wood.

Armored Cars. Designs for light and medium armored cars have been completed, and two pilots of the light type and four of the medium type will be manufactured for test in the mechanized force at Fort Leonard Wood.

Fuzes. A mechanical time fuze, for use in the 3-inch antiaircraft gun, has been standardized, and manufacture of this fuze is being inaugurated at the Frankford Arsenal. Two types of combination super-quick and short-delay point detonating fuzes have been tested with very promising results.

Loading of Ammunition. Satisfactory progress has been made in the development and installation at the Picatinny Arsenal of new apparatus for the handling of TNT in the loading of ammunition. A mechanical arrangement has been installed for stirring the liquid TNT during the process of cooling to the temperature at which it is poured into the ammunition. This will supersede the previous expensive and unhealthy method of manual stirring.

Propellants and Explosives. Prior to the fiscal year 1928 a flashless, non-hygroscopic, smokeless powder was approved as standard for service use in the 75-mm. gun, model 1897, and a non-hygroscopic type was approved as standard for the 155-mm. G. P. F. gun, model 1918. During the past year satisfactory flashless, non-hygroscopic powders of similar type have been developed for the 2.95-inch mountain gun, the 75-mm. pack howitzer, and the 105-mm. howitzer.

Research and Ballistics

An instrument for measuring the time of flight of projectiles in connection with the test of fuzes has been constructed, based upon a combination of photo-electric cell and Aberdeen chronograph and the necessary amplifiers. The cell is acted upon by the flash of the gun, followed by the flash of the bursting projectile, this action producing records on the Aberdeen chronograph.

THE CHIEF SIGNAL OFFICER OF THE ARMY

Outstanding Accomplishments of the Signal Corps During the Fiscal Year 1928

In the sphere of fire-control equipment two major developments have been practically completed, namely, the development and construction of test models of a portable time interval apparatus for use in connection with the transmission of firing data for railway guns and other mobile artillery, and the development of an anti-aircraft gun battery telephone unit for transmitting data from the readers to the gun crew. Models of these two types of equipment have already been subjected to field tests with the result that the types are about to be adopted as standard.

Another phase of development is that of sound ranging equipment for mobile artillery. Models of improved design have been completed and are now undergoing test by the Coast Artillery and the Field Artillery. This very interesting activity relates to the problem of accurately locating the position of enemy guns and, similarly, the direction of friendly artillery fire upon specified targets through the medium of recorded sound waves.

Permanent Signal Communication Systems

Efforts have been concentrated during the past year toward the placing of all Signal Corps wire and radio communication systems in the best possible operative condition. . . . Similarly, and with a view to the betterment of fire-control communication systems, this office has, during the past year, in cooperation with the Chief of Coast Artillery, extended every possible effort toward the betterment of the general maintenance condition of these systems. Through the provisions of explicit detailed instructions covering a more rigid inspection of fire-control equipment, an effort has been made to see that all equipment is maintained in its highest possible state of efficiency in order that the systems, whether on an active or a caretaking basis, may be ready and in complete serviceable condition in the event of an emergency.

THE CHIEF OF CHAPLAINS

The churches are now represented as follows: Baptist, North 9; Baptist, South 5; Baptist, Colored 2; Congregationalist 9; Disciples of Christ 7; Evangelical 1; Lutheran—all bodies 6; Methodist Episcopal 17; Methodist Episcopal, South 9; Methodist Protestant 1; Methodist Episcopal, African 1; Presbyterian, U. S. 2; Presbyterian, U. S. A. 10; Presbyterian, Cumberland 1; Protestant Episcopal 9; Roman Catholic 25; Reformed 2; Universalist 2; and Unitarian 2.

THE CHIEF OF CAVALRY

Within the past few months there has been introduced into the cavalry service the first American armored car unit, designated as the "First Armored Car Troop." This troop has been assigned to the First Cavalry Division at Fort Bliss, Texas, as the War Department has approved the recommendation that an armored car unit manned by cavalry personnel be adopted as an integral part of the cavalry division.

Motorization and Mechanization

Motorization. As regards motorization, there is no doubt but that in ordinary country, provided with a reasonable number of fair roads, motor transportation is of tremendous help to forces of all kinds. We cannot, however, afford completely to motorize the trains even of so large a unit as the cavalry division. Pack trains should always remain an element in the division train. It is believed that at least one wagon unit will also be essential in the cavalry division, although when suitable cross-country cargo vehicles are available in large quantities the matter of further substitution of wagons by motor vehicles should be

considered. In general, the line of development in motorization towards which the cavalry is working is to adopt motor equipment to the greatest extent possible, so long as each piece of motor equipment adds to the mobility of cavalry and does not interfere with its ability to go over any kind of country and under any conditions of road and weather. The use of motor trucks for the emergency transport of cavalry units has been studied and various experiments recently held. It is hoped that trucks equipped to carry cavalry will be equally well suited to carry infantry or artillery with their equipment.

Mechanization. As regards mechanization, it is believed that the horse-soldier, like the foot-soldier, cannot be replaced by any machine as yet developed nor is it anticipated that any such machine will be developed. So long as there are marshes to cross, rivers to swim, woods to pass through, or mountains to climb, just so long will the cavalryman and the infantryman be necessary. Tanks, tankettes, armored cars, armored airplanes, smoke projectors, gas and all modern means of warfare in use or still to be adopted cannot take the place of the man and the horse. They supplement the efforts of the man and the horse but they do not replace them.

THE CHIEF OF INFANTRY

Antiaircraft Defense. This has been one of the most outstanding tactical studies of the year, and one of most intense interest to the service at large, where it is generally accepted that, in addition to the protection furnished by the air corps and by troops of the antiaircraft service, it is imperative that troops on the march, in bivouac, and in battle, be able to protect themselves from air attack by low flying airplanes.

Motorization and Mechanization. Studies have been made of various schemes for placing our forces on a motorized and mechanized status. As a summary, it may be said that motorization and mechanization have many advantages over our present forms of transportation but that extensive experiments should be carried on before definitely committing ourselves to any one type of materiel and of organization. New forms of motor transport and of mechanized weapons now on hand, or appropriated for, are wholly inadequate for proper experimentation in organization and tactical methods. Complete combat units, the reinforced battalion and the reinforced brigade, should be equipped with the new forms of motor transport, etc., and given thorough tests in tactical employment under widely differing conditions of terrain and climate. Tests should be so conducted as to take advantage of the ingenuity of the greatest number of experienced individuals.

EXTRACTS FROM THE ANNUAL REPORT OF THE CHIEF OF COAST ARTILLERY (MAJOR GENERAL ANDREW HERO, JR.) TO THE SECRETARY OF WAR FOR THE FISCAL YEAR ENDING JUNE 30, 1928

General. For the Coast Artillery Corps the outstanding features of the fiscal year 1928 have been: Resumption of seacoast artillery battle practices in the United States; Improved tactical training incident to concentrations on both east and west coasts; A general improvement in artillery technique; Standardization of artillery practice methods, including the scoring system, and the preparation of a training regulation covering this subject; The adoption of a new system for controlled submarine mines; Revision of defensive sea area plans; A rapid advance toward standardization of sound ranging equipment and antiaircraft gun equipment, and hopeful progress toward solving the problem of antiaircraft machine gun fire at the longer ranges; Initiation of studies for the antiaircraft defense of important localities; and an increased strain upon personnel generally to maintain high standards of training and appearance, and at the same time to care for the valuable installations in their charge.

With the issue of G. O. 22, W. D. 1927, the missions of the Coast Artillery have been logically defined and the embarrassments to instruction and to preparation of training regu-

lations removed. Responsibility for heavy trench mortars has been transferred to the Field Artillery, leaving the Coast Artillery charged only with the development and use of weapons intended for fire on moving targets (naval or air) and of the auxiliaries necessary for control of such fire.

Training. Considering the various conditions Coast Artillery organizations serve under in our overseas and continental garrisons, progress in training of all units during the year has been praiseworthy.

Analyzed we find that 75% of the batteries fired at greater speed, the improvement being especially marked for the rapid fire armament. Greater range was attained by 77% of the batteries. Fifty-four per cent of the batteries improved in accuracy, the greatest improvement being noted for rapid fire armament. In hits per gun per minute improvement is noted in 78% of the batteries firing.

The improvement in seacoast artillery practice is attributed to the system of competition introduced in 1926. While not favorably received by some officers, there has been a general increase of accomplishment, interest, and enthusiasm. This is far more notable in the reports of those target practices for the calendar year 1928 which have been received to date than in the practices reported upon above.

Battle practices were held in each of the defended overseas possessions, at San Francisco, California, at the Harbor Defenses of Long Island Sound and at the Harbor Defenses of Long Island Sound and at the Harbor Defenses of Chesapeake Bay. While practices of this kind have been held from time to time in overseas possessions since the World War, inadequate personnel and other causes have prevented in the United States. The allotment of funds for troop movements incident to Coast Artillery training in the United States for the F. Y. 1928 enabled concentrations to be effected at the three harbors named. This gave valuable training to the higher echelons and has the added effect of placing in service some batteries and installations normally without manning parties, thus enabling us to ascertain the true condition of equipment. It is hoped to synchronize the annual encampment of National Guard units and the active training of Reserve Officers with these battle practices in future so that the more important harbor defenses in the United States may be placed, in turn, approximately on a war footing.

Minor joint exercises were held in the United States during the troop concentrations for the battle practices, the Navy furnishing in each instance such vessels as could be made available. In the Panama Canal Department a joint communication exercise was held in connection with a minor joint exercise off the Pacific entrance to the Canal, Army and Navy aircraft participating as well as the Navy Control Force and the Harbor Defenses. The exercise was of considerable value to the harbor defense troops but the greatest benefit derived was from ascertaining, in a practical manner, methods of coordinating the several systems of communication.

Extensive Joint Army and Navy exercises were held in the Hawaiian Department, in which all Coast Artillery units took part. That department apparently offers the best field for training of the combined arms in coast defense, with the Panama Canal Department a close second.

No report as to Joint Army and Navy exercises in the Philippine Department for the year reported upon has been received in this office.

While excellent results in tactical training are obtained at joint exercises, such as those held in the United States this year, it can not be denied that much is lost through the absence of mobile forces at these exercises. Even when these are only outlined by establishing the higher command posts for the defense of a section of the shore line, and a general attack is developed under the control of competent umpires, a sense of reality is introduced that enables these exercises to approximate in value those held in overseas territories. Only one such exercise has been held in the United States since the World War—that in the Narragansett Bay Area noted in my report of last year.

The Air Corps has been generous in supplying the planes necessary for Coast Artillery training but reports received indicate that, with two exceptions, lack of means has prevented progress in testing the regulations for joint employment of the Coast Artillery and Air Corps. The exceptions referred to are the Hawaiian and Panama Departments. In the former such joint action was featured in the exercises referred to above. In the latter a special exercise of attack and defense was featured. Plans were made for joint exercises in the Harbor Defenses of Chesapeake Bay but these had to be abandoned as the Air Corps was unable, without material curtailment of scheduled training, to supply planes and air ships in numbers sufficient. The training text referred to will necessarily have to be continued as a tentative regulation for the time being.

Materiel. The equipment for terrestrial sound ranging has been under development with the assistance of the Signal Corps. It has been given a service test during the last year and found satisfactory. It is expected that it will be adopted as standard within a short time.

The antiaircraft tests that have been held at Aberdeen Proving Ground, Md., during the past two years, through the close cooperation of the Ordnance Department, the Corps of Engineers, the Signal Corps and the Air Corps have resulted in surprising progress in antiaircraft fire control for guns. New equipment has been developed that so far exceeds the efficiency of the war time materiel now in service as to require immediate action to secure rearmament of antiaircraft gun units. Funds have been appropriated for the F. Y. 1929 to initiate this rearmament program. Fire control for machine guns beyond tracer ranges is still in an experimental stage; various experimental devices which promise to solve this problem will be tested at Aberdeen Proving Ground this fall.

A comparatively inexpensive type of emplacement for 155-mm. guns has been designed and given a satisfactory service test in Panama. It allows the trails to be moved quickly and this gives the gun 180 degrees, or, if desired, 360 degrees of field of fire. As the gun has only a limited traverse on its carriage, this type of emplacement adds considerably to its usefulness against rapidly moving targets.

The personnel of the 52d Coast Artillery (Ry) have devised a system of ammunition service from car to gun enabling loading to be continuous throughout a wide traverse of the piece. As a result, the falling off in rate of fire noted for the calendar year 1927 has been corrected and an improvement will be recorded for the present year.

Conclusions. In technical training the condition of the Corps is satisfactory in all branches.

In tactical training there has been a marked advance during the past year. This should be continued by the allotment of the necessary funds for troop movements. It is very desirable that the minor joint exercises be extended by outlining, at least, the mobile coast defense forces for sectors of the coast line adjoining the harbor defenses at which these exercises are held, and that sufficient aircraft be made available to develop the Air Corps' mission in coast defense.

The progress of development work toward standardization of equipment has been gratifying.

Military Situation of Holland

Fort Eustis, Va.,
Nov. 1, 1928.

Subject: Correction of an article appearing in the COAST ARTILLERY JOURNAL.
To: The Editor.

1. It has been brought to my attention that in an article on *The Military Situation of Holland*, written by me, and appearing in the July number of the COAST ARTILLERY JOURNAL, certain statements were made which now appear to be in error. At the time this article was written, (January, 1928) the data available on these questions were considered

reliable, but recent information leads me to believe that either the authorities were wrong or the situation has changed since the paper was written. As this article appears, it purports to show the present-day conditions in Holland, and these conditions do not appear to be the same as the article would lead one to believe.

2. On page 39, the following statement is made: "Since the World War, Holland has become more and more remiss about clearing the Scheldt Channel. The last year or two the channel has started to fill up and is now seriously interfering with the ships attempting to reach Antwerp. The Belgians have protested several times, and even offered to dredge the channel themselves, but Holland will not do the work nor allow them to do it."

In an address delivered on June 12, 1928 to the representatives of the Belgian Press, and quoted in the Belgian *La Metropole*, M. Tobie Claes, Director of the Maritime Services of the Scheldt, denies most emphatically the current rumors that Holland has been lax or wilfully neglectful of her part of the dredging of the Scheldt Channel. He further states, in *La Libre* (Belgian) that "it is a calumny to say that Holland gives evidence of ill will towards us and is planning to let the Scheldt silt up in that part of the river that is found on Dutch territory in order to make the port of Rotterdam indispensable." These statements of M. Claes are borne out by M. Baels, the Belgian Minister of Agriculture and Public Works, in a debate before the Senate on April 4, 1928. M. Baels quotes M. Melotte, the Director General, who states that rumors that Holland had failed to fulfill her part of the dredging operations were absolutely false.

It is apparent that statements from such leading Belgian authorities on the question of the Scheldt River must be accepted as being correct.

3. In regard to the discussion of the Port of Antwerp and the question of the Dutch-Belgian Treaty, more recent developments have shown that, due to the increasing understanding and accord between the two nations, the questions will undoubtedly be settled without referring them to the signatories of the Versailles Treaty.

4. In view of the information contained in the preceding paragraphs, I think that these corrections should be published in order to give a fair description of the relations between Belgium and Holland.

CARL B. WAHLE,
1st Lieut., 51st C. A.

Government Insures Supply of Helium for Military Dirigibles

The successful transatlantic flight of the monster dirigible, the *Graf Zeppelin*, and the announcement by the Navy Department of the awarding of a contract for two Leviathans of the air of far larger dimensions even than the great German airship, have aroused keen interest in the possibilities of safe and rapid travel by means of these huge lighter-than-air craft. Great Britain is constructing two palatial dirigibles, intended for trans-oceanic service, and private American interests have taken up in earnest the manufacture of gigantic air liners.

If these argosies of the air are to offer the real assurance of safety necessary to their completely successful use, it is essential that they depend for buoyance on a non-flammable gas. The only gas of this description having the requirement of lightness is helium, that very rare element which is found, in small proportions, in certain natural gases. As is well known, the hydrogen gas used as the lifting agent of the *Graf Zeppelin* is extremely explosive, and the accidental ignition of hydrogen has been responsible for disasters to various airships in the past.

The dirigibles operated by the Army and the Navy of the United States are provided with helium, but all foreign-owned air-craft must depend on the highly inflammable hydrogen for their buoyancy. This situation is due to the fact that the United States is the only nation, so far as known, having sufficient resources of helium to develop a commercial supply for aeronautics.

It requires, however, a great amount of helium to fill the gas cells of a big dirigible, a little over two and one-half million cubic feet of helium being needed for the *Los Angeles*. In those rather rare natural gas deposits which contain any helium at all, no more than between 1 and 2 per cent by volume of the gas can be extracted as pure helium.

The known natural gas fields to which the United States can look for obtaining its helium are not inexhaustible. In fact, the Petrolia field in northern Texas, which has been the principal source of supply, is now in the last stages of its life after producing gas for more than twenty years. Where, then, are to be obtained the large supplies of helium which will be necessary for the continued safe operation of the two air-monsters recently contracted for by the Navy and other ships which will be built from time to time?

The maintenance of these vital helium supplies is one of the jobs which have been put up to the United States Bureau of Mines, of the Department of Commerce, the scientific bureau which has kept Uncle Sam in helium for the past several years. For years the chemists of the Bureau of Mines have been analyzing samples of natural gas obtained from many gas fields located throughout the country, always in quest of the characteristic bright yellow line which, viewed through the spectroscope, announces the presence of the prized helium. This analytical work has resulted in accumulating valuable data regarding our helium resources, and the answer to the question as to where Uncle Sam is to obtain his helium, for some time to come, at least, has been found, it is considered, in the Cliffside natural gas structure lying to the northwest of the city of Amarillo, in the Panhandle district of Texas. A big helium production plant, embodying in its helium separation cycle the results of thorough research on the part of the Bureau's specialists, is nearing completion near the town site of Soncy, about six miles west of Amarillo, and from the natural gas of the Cliffside structure, which has been found to have a helium content of about 1¼ per cent by volume, will be extracted the supplies of the wonder gas which will keep aloft Uncle Sam's giant air cruisers of the future.

The story of helium has been called one of the romances of science. Viewed through the spectroscope, helium, made incandescent by an electric discharge, displays a bright yellow line characteristic of this gas. This line was first made visible to man when in 1868 a group of scientific investigators in India for the first time turned a spectroscope on the chromosphere, that part of the atmosphere of the sun, about 10,000 miles deep, which merges into the corona. Recognizing an element in the sun not previously discovered on the earth the new element was given the name "helium" from the Greek word "Helios," the sun. Not until the latter part of 1894 was terrestrial helium discovered, when Sir William Ramsay, the eminent English scientist, found the bright yellow helium line in an inert gas obtained from the radio-active mineral cleveite. Dr. W. F. Hillebrand of the United States Geological Survey had obtained this same gas from the same source, but did not identify the helium in it.

Helium is found in the atmosphere in the proportion of one part in 185,000 parts. It is found in minute quantities in sea and river water, in the gases evolved from many mineral springs and in some volcanic gases, but in none of these latter sources is the gas sufficiently plentiful to provide commercial supplies.

Helium production for use in lighter-than-air craft was started by the United States government during the World War. A thorough study was made of fields which contained helium-bearing natural gas, by specialists of the United States Bureau of Mines and the United States Geological Survey. As a result, it was established that the Petrolia gas field, of Clay County, Texas, was at that time the field best suited as a source of supply for the government's initial helium development.

At the inception of the development work three plants were constructed to try out experiments on helium production. Three firms, the Linde Air Products Company, the Air Reduction Company, and the Jeffries-Norton Corporation, active in kindred lines, cooperated with the Government in this project, using modifications of their processes for the purpose. Two of the plants were erected at Fort Worth and one at Petrolia, and all three were

supplied with gas from the Petrolia gas fields. Funds for development work were provided by allotment from the War and Navy Departments.

Following this experimental work, a plant using the process developed by the cooperating Linde Air Products Company was constructed at Fort Worth under the jurisdiction of the Navy Department. This plant has been operated continuously since October, 1922, and has produced probably 90 per cent of all the helium that has been produced in the world. The separation cycle has been operated by the Linde Air Products Company under contract with the government. Until July 1, 1925, this plant was under the jurisdiction of the Navy Department. On that date it passed by legislative enactment under the jurisdiction of the Bureau of Mines and it has since been operated under the direction of that bureau.

It has long been realized that existing facilities for helium production did not give adequate assurance for the future. Therefore, the increasing information concerning the nation's helium resources gathered by the Bureau of Mines was given careful review and study with the object of discovering a helium resource which could be more surely relied upon for both present and future production. The Cliffside structure of the Amarillo gas field, which had been discovered after the initial operations at Fort Worth were started, was found, after prolonged and careful investigation, to contain a large reserve of gas of relatively high helium content. Comparison with other sources showed it to be the most favorable of all known fields when cost of production, possibilities of conservation, and all other factors were taken into account. Therefore, it was selected as the source of supply for the new helium production project. As the gas of the Cliffside structure is approximately twice as rich in helium as that from the Petrolia field, and as conditions are such that this gas can be conserved, it is believed that the new Amarillo project will provide a supply of helium for the government's lighter-than-air craft operations for many years to come.

Rapid progress is being made in the construction of the new plant, occupying a site of about 18½ acres, at Soncy, about six miles west of the city of Amarillo. The buildings have been completed and the equipment is now being installed. Gas for the project is to be supplied by the Amarillo Oil Company under a contract with the government covering gas rights in 26,000 acres of land on the Cliffside structure. The company now has three gas wells with a combined open flow of 27,000,000 cubic feet per day available for the exclusive use of the plant. A fourth well now being drilled has reached the gas producing horizon and the completion of this well is expected within a short time.

In the new Soncy plant, the helium will be recovered by cooling the gas to approximately 300 degrees Fahrenheit below zero, at which temperature all of the constituents of the gas, except the helium, are liquefied, permitting the helium to be drawn off as a gas and compressed into tank cars or steel cylinders for shipment to points where it will be used primarily in the Army and Navy lighter-than-air craft. The extremely low temperature to be used in the plant will be produced by compression, and subsequent expansion of the gases. At the minimum plant temperature, atmospheric air is a liquid, carbon dioxide and mercury are solids, lead and copper take on properties of steel, and rubber is as brittle as glass. In comparison, such temperatures as are found at the North Pole would be unbearably hot. Placing an icicle in the liquefied gases in this plant would be like thrusting a hot poker into water.

The Cryogenic Laboratory of the Bureau of Mines, in which data for use in improving helium production and purification processes are developed, contains complete equipment for conducting research at low temperatures. Because of the extremely low temperature at which certain operations are conducted in this laboratory it has been called "the coldest spot in the world."

Before the United States entered the World War, helium had been obtained only in small amounts as a curiosity in scientific laboratories. The total quantity recovered probably did not exceed 100 cubic feet and the cost of production was about \$2,000 per cubic foot. As the result of the investigative work of the Bureau of Mines, in cooperation with

the Army, the Navy, the Linde Air Products Company and others, the cost of production of helium has now been brought down to but a few cents per cubic foot.

During use in airships, helium escapes and air enters through the walls of the gas cells; therefore, at intervals the helium in an airship must be removed, purified, replenished, and put back. Three helium purification plants have been designed by the Bureau of Mines and constructed under its direction. The first of these is a stationary plant at Lakehurst, N. J., built for the Navy; the second, a mobile plant mounted in a railroad car, built for the Army; and the third is a stationary plant for the Army erected at Scott Field, Ill. The Scott Field plant is capable of purifying 10,000 cubic feet of helium per hour.

Ten Years After the Armistice

A decade has passed since the world emerged from its grisly nightmare, and we have learned that the will for peace moves slowly. Although we have made appreciable advances, not yet have we attained the object for which the great war was fought. We have proof that a change is coming over the earth, but we cannot as yet say that war has been banished utterly.

Perils escaped have the quality of seeming smaller as they recede into the past. In the enjoyment of unexampled prosperity we are apt to forget the lessons of the last war and of preceding wars. We are prone to overlook, for instance, that all our conflicts have been brought on by the lack of adequate defenses. Because we have neglected to make prudent provision against war, our sacrifices in human life and in treasure have been doubled or trebled. When there is no cloud on our horizon it is easy to forget that there can be no security without reasonable readiness for defense.

* * * * *

America has attained a degree of prosperity never before experienced by any nation. Our commerce and industry have reached unexampled heights. Our rich argosies are dispatched to every quarter of the globe. Our material well-being excites the admiration, and sometimes the envy, of less fortunate nations. Ten years after the war we still face the fact that nations have their own aims and aspirations, their hatreds and their jealousies. There are disputes abroad that might lead to war, notwithstanding the solemn pledge to refrain. And in this situation we see the nations marking time. None thinks of disarming either on land or at sea.

* * * * *

In the year 1928 it would be an act of faithlessness to those who gave their lives in the country's defense to listen to the fallacies of the little Navy men and the pacifists. Our policy should be to maintain establishments on land and sea sufficient to serve us in any circumstances.—*Seattle Times*.

"The true spirit of economy relative to war, is to eliminate or decrease the cost of war by paying the insurance rate of protection against such a calamity." Secretary of War John W. Weeks, Address in San Francisco, May 25, 1923.

COAST ARTILLERY BOARD NOTES

Communications relating to the development or improvement in methods or material for the Coast Artillery will be welcome from any member of the Corps or of the service at large. These communications, with models or drawings of devices proposed, may be sent direct to the Coast Artillery Board, Fort Monroe, Virginia, and will receive careful consideration. W. E. COLE, Colonel, Coast Artillery Corps, President, Coast Artillery Board.

Project No. 657, Targets for Antiaircraft Artillery Target Practice.—A study of correspondence between the Chief of Coast Artillery and the Chief of Air Corps, with reference to the use of gliders to be launched from an airplane; the design of towing gear to permit of abrupt changes in course of the target by diving, climbing, etc.; the equipping of airplanes to permit of more than one target sleeve being carried; and the practicability of conducting target practice with three tow-planes flying in formation, each equipped with a sleeve target.

Project No. 658, Machine-Gun Antiaircraft Service (For Defense of Ground Troops Against Aircraft).—A study of a method of mounting and operating an antiaircraft machine gun from an infantry cart. The Board, after due consideration of accompanying papers, recommended that the machine-gun mount described is not at present applicable to coast artillery units.

Project No. 659, "Crichlow" System of Spotting and Plotting for A. A. Firing.—A description of a system of spotting antiaircraft fire and applying the results. After completion of the Aberdeen exercises this system will be studied in comparison with the one now being employed at Aberdeen, and the Coast Artillery Board will submit comments and recommendations covering the practicability of applying a scheme of this type in antiaircraft organizations.

Project No. 660, Service Test of Type P-12 (Radio) Headsets.—This new type headset was developed at the Signal Corps Radio Laboratories and is designed to replace the P-11 for all field uses. The headsets embody several new features and are now undergoing service test.

Project No. 661, Illumination of Mortar Pits and Gun Emplacements for Night Firing.—The Board has under study the problem of the proper illumination of mortar pits and gun emplacements.

Project No. 662, Service Test of Modified Experimental Diaphragm Gas Masks.—The Board has been furnished with 20 of the latest type experimental diaphragm gas masks. These masks are undergoing service test.

Project No. 663, Effect of Large-Diameter Propelling Charges on Excessive Pressures.—Proper ramming of powder charges will serve to eliminate one of the causes of excessive pressure. The Board recommended that the rammer staff be provided with a red band to indicate the correct position of the powder charge in the chamber. (See also, Section V, Circular 46, W. D., 1928.)

Project No. 664, "Clark-Hoyt" Spotting Board.—A Spotting Board, designed by Captains Clark and Hoyt of the Coast Artillery Reserve and used in target practice at Fort Hancock, N. J., during the past summer, is under study by the Board to determine its suitability for Coast Artillery use.

Project No. 665, Source of Power Supply for Field Telephones in Fire-Control Car, Railway Artillery.—This is a system worked out by the 52d Coast Artillery (Ry) and is a method of furnishing power to all telephones within a fire-control car from a common battery, standard retardation coils being used to prevent cross-talk. Telephones outside fire-control cars are equipped with local batteries.

BOOK REVIEWS

Some Memories of a Soldier. By Major General Hugh Lenox Scott, U. S. Army, Retired. The Century Co. 1928. 5¾"x 8¾". 673 pp. Ill. \$5.00.

SCOTT, HUGH L. (012989) Born Kentucky 22 Sept 1853; Cadet, US Military Academy 1 July 1871; 2d Lt 9 Cavalry 15 June 1876; transferred to 7th Cavalry 26 June 1876; 1st Lt 28 June 1878; Captain of Cavalry 24 Jan 1895; Major 25 Feb 1903; Lt Col 3 March 1911; Colonel 18 Aug 1911; Brig Gen 23 March 1913; Maj Gen 30 Apr 1915. Distinguished Service Medal. General Staff 22 April 1914 to 16 Nov 1914; Chief of Staff 17 Nov 1914 to 22 Sept 1917; retired 22 Sept 1917 by operation of law. L. H. D. Princeton 1910; LL. D. Columbia 1914; D. S. Penna. Military College 1916.

Such is the terse record of General Scott as shown in the Army Register, for that is the Army way. General Pershing's record is hardly more extensive. There is very little color in official records and for that very reason one welcomes private and personal accounts of "The Old Army" . . . especially when they are given by one who truthfully can say: "All of which I saw and a part of which I was."

General Scott's book is frankly a personal narrative. As its title indicates, it is an account of what he saw and did during his army career of more than 46 years. These recollections are grouped chronologically into ten distinct periods: boyhood and West Point, service on the Plains, Cuba, the Philippines, Superintendent at West Point, the Border, the World War, the Russian Revolution, France and England, and Camp Dix.

The second period or "part" has special interest for those who enjoy the atmosphere of our vanished Wild West. The Indian figures largely in this part of the book, and as a human being—not as a figment of the imagination. Indian fighting is absent but the atmosphere is there, as for instance in the account of the author's visit to the scene of the Custer massacre on the first anniversary of that battle. It was during this period that Lieutenant Scott made a study of the Indian sign language, his knowledge of which later brought him no little fame. He had good opportunities to observe the deplorable manner in which Indian affairs were handled from Washington; his protests against the injustices meted out to the Indian on repeated occasions impress this reader as markedly restrained. Worthy of mention is the description of what was probably the last case of "drumming out of the service" . . . in 1877.

Captain Scott reached Cuba after the Spanish-American War was over and hence Part III, of some 70 pages, is devoted to his administrative duties during the period of reconstruction in Cuba.

In 1902 he accompanied General Leonard Wood to the Philippines and became military governor of the Sulu archipelago. Here are 150 pages that are welcome indeed to those who served in the Land of Dhole Dreams during the Days of the Empire. To the civilian, too, this part of the book is interesting in its accounts of Moro activities.

Next Colonel Scott relates his experiences from 1909 to 1914: walks in Rock Creek Park with President Roosevelt, his friendly guidance of President Wilson in military and Philippine policy, his importation of the posting seat in the Cavalry, his settlement of various Indian troubles, and finally his activities in the Mexican border trouble.

General Scott's chapter relating to the World War depicts the indecision and confusion which attended our entrance into the World War. There are but few accounts of the inside workings at Washington during this parlous time and for this reason General Scott's observations are all the more welcome. Perhaps some authorities might disagree with him over the relative importance of the factors responsible for whatever success we may have

achieved in the World War. General Scott rates the Army's administrative system first, as is more or less natural to an administrative expert. The consensus of lay opinion, however, seems to have been that the "system" of the Army was rotten. No allowance was made for the fact that this rottenness—imaginary or real—was directly the result of agencies outside the Army itself: restrictive legislation, decisions and regulations from Washington. Is it not told that one of our Quartermaster Generals bitterly complained because "Just as I get a perfect system going, along comes a war and ruins it"? Be that as it may, General Scott throws some interesting side lights on the activities of wartime Washington.

Two months after we entered the war General Scott accompanied the Root Mission to Russia in the endeavor to keep Russia fighting on the side of the Allies. Among his observations covering this trip is:

I saw only one custom in Russia which I thought worth adopting into our army. Whenever an officer of rank enters a barrack room, the men all stand attention and call out in a loud voice in unison, 'Good morning, my General!' and are answered,

'Good morning, my children!' . . . a custom I liked very much.

That is doubtless a likable custom but this reviewer would enjoy watching (at a safe distance) an attempt to introduce it into certain units of the US Army—a mule battery by preference!

The Root Mission occupied General Scott for about three months, leaving him only about two months to serve as Chief of Staff before his retirement on September 22, 1917. Early in October he sailed for England and France for a tour of the battle front, preparatory to taking command of the 87th Division at Camp Dix. His description of service at Camp Dix is invaluable in that it shows the change in viewpoint which invariably accompanies a change from staff to line duty or the reverse. Even General Wood showed the same change.

The book is pleasant reading. It gives the civilian an insight into Army ways which otherwise would be hard to obtain; it recalls to the Service reader many pleasant experiences—in the West, in Cuba, or in the Philippines. The numerous letters of commendation which pepper the book remind one of exhibits in the proceeding of a Class B board, but they are rendered less objectionable by the author's long and honorable career.—P. D. B.

America's Part. By Henry J. Reilly, Brigadier General, O. R. C. Cosmopolitan Book Corp. 1928. 5½"x 8". 326 pp. Ill. \$3.50.

The title of this book does not indicate its contents as comprehensibly as another could. It is easy to read, understandingly written, and should be of benefit to any one. It evidently is not put forth as a military text-book, and this blunt fighter's style displays a curiously agreeable mixture of professional soldier, newspaper editorial, and political training. "Who won the War" has ever been debated, and no majority will ever be convinced.

In the book there are some inaccuracies, but none of moment. The quotation of a few citations and the omission of many, many others to prove our courage when so many thousands were involved, is not intentional. Failure to mention the heroic medicos and auxiliaries, the S. O. S., our own Russian attempt, and the help given the non-combatants during and after the war is pardonable in the Professional Soldier. Again, disregard for the various Government reasons for interference or unpreparedness is likewise the fighter's view.

The book demonstrates that for once our own Government picked the right man at the start in our immortal "Black Jack," and stayed with him. There were several others to choose from, and when the choice was made those others did not bicker as in the other wars but set an example of magnificent cooperation for us all.

The book very clearly and interestingly affords the laymen a general idea and understanding of wars, war tragedy, and diplomacy leading up to 1914, the frustration of German plans in 1918, and Uncle Sam's participation in it. Any U. S. veteran can use his memory and with the book's information orient himself over there again.—J. J. V. P.

The War Department, 1861: A Study in Mobilization and Administration. By A. Howard Meneely, Ph. D. New York. Columbia University Press. 1928. 6"x 9". 400 pp. \$6.00.

Of no period in the history of the United States is it more difficult to write than of the Civil War, and no period has a greater wealth of material available for research. The trouble is that so many of the documents fail to respond satisfactorily to the usual tests. Confusion, misunderstanding, ignorance of facts, and self interest so becloud the issues that the historiographer must be possessed of a wealth of patience if he is to arrive at the true causes and effects of the events of that period. Mr. Meneely found it so, and his story, when he finally dug out the facts, was one of cross purposes, conflicts in authority, juggling, competition between purchasing agencies, and lack of coordination everywhere.

The military man could have told him that that was what he would find. Our history leads us to expect such conditions at the outbreak of any war. We Americans are a warlike people but we heartily disrelish being called so and will deny it. We take pride in pretending to believe that we are peaceful, but note how joyously we go to war when war comes. Therein lies our difficulty, for it leads to two delusions: First, that we need no army in time of peace, and second, that if ever we should require an army we can raise enough men overnight to whip all creation.

War thus has always found us unprepared. We had more men in the Mexican war than we could equip, and the same situation arose at the outbreak of the Civil War. Mr. Meneely wanted detailed facts and his efforts have been most painstaking. He started with the intention of investigating the War Department through the four years of the war, but he early found that the task was too much for a single volume. Restricting the scope of his work to Mr. Cameron's administration of Departmental affairs has enabled him to give a fuller account of governmental activities in raising, arming, and equipping the army than would otherwise have been the case.

The study is masterly and is fully annotated, although he quotes primary and secondary sources to about an equal extent. In his bibliography, however, he classifies his source material and we may see at a glance his authorities in their approximate order of authoritativeness—the list fills nine pages. Incidentally, we note that some of his material came from the Quartermaster's Office at Fort Myer, *Maryland*.

This is not a book which may be read in a single evening. It must be studied, and it will repay study, for its scope is not restricted to the War Department. We see Fremont in the West, Butler in the East, Wool in New York, agents in the Central Atlantic states, and state-appointed purchasing agents in Europe. Drawn together, they all help to picture the problems which confronted the Administration, and in the end we can only wonder that Mr. Lincoln's patience endured.

Handbook of Napoleon Bonaparte. By Irar L. Sjöström. Philadelphia. Dorrance and Company. 1928. 5¾"x 5½". 145 pp. \$1.50.

An Army officer is always interested in the career of Napoleon Bonaparte but he is frequently at a loss when attempting to place quickly some event or some date connected with the "Little Corporal." In such a case he needs this handbook, which is in reality a check-list to the great mass of material written about this famous son of Corsica. The first part of the book is a chronological table of the principal events in Napoleon's career. Following this are a few descriptions of his personal appearance as recorded by actual observers. The remaining, and by far the larger, part of the volume is devoted to a table, alphabetically arranged, recording persons, places, and events connected with Napoleon. Each entry is accomplished by a brief descriptive or explanatory note recalling to mind the association with Napoleon and connecting the person, place, or event with his career. Inside the back cover is a map illustrating Napoleon's activities.

This is a valuable and practicable little reference book.

Bullets and Bolos. By Colonel John R. White, Philippine Constabulary, Retired. The Century Co. 1928. 5¼"x 7¾". 348 pp. Ill. \$3.50.

This is a well-told narrative of thirteen years' service as an officer of the Philippine Constabulary. The bulk of the book deals with the writer's first five breathless years of active field service in Negros, Mindanao, and Sulu, culminating at Bud Dajo, where he was severely wounded. His subsequent, less picturesque duties in charge of the penal colony at Iwahig and the Constabulary Academy at Baguio are outlined more briefly. His story presents an entertaining series of adventures and a vivid outline of Philippine conditions from "the days of the Empire" to the period of "Filipinization." The military reader will be especially interested in his impressions of Generals Wood, Allen, Harbord, and Scott, and in his insistence that the regular officer, whose contacts with a single tribe never exceeded two years and seldom approached that period, lacked that understanding of native ways which would have gone far to avert needless friction.—F. M. G.

Following the Flag: Diary of a Soldier's Wife. By Alice Applegate Sargent. Kansas City: E. B. Barnett. 1928. 5¼"x 8". 91 pp. \$1.10.

The author was the wife of the late Colonel Herbert H. Sargent, who will long be remembered for his *Campaign of Santiago de Cuba*. The book is a narrative of events following the author's marriage in 1880. As an Army wife, she followed her husband around the world—to Fort Klamath, Fort Bidwell, Fort Walla Walla, Fort Huachuca, Fort Bowie, Fort Logan, Fort Wingate, Cuba, Washington, twice to the Philippines, and elsewhere—as Army wives do. Except in detail, her experiences were those of any Army woman and except in name her stations were those the other wives know.

"Pack and move" is one thing to which all must become accustomed in the Army, and Mrs. Sargent's account is all the more interesting in that one can read one's own experiences into the narrative. The account is all too brief to be absorbing. One cannot pack the experiences of forty-two years into ninety pages and have more than a synopsis. It is to be regretted that the account was not expanded to present a more complete picture of life in the West in the 'Nineties and in the Philippines during the Insurrection.

Simon Girty: The White Savage. By Thomas Boyd. New York: Minton Balch & Company. 1928. 6"x 8". 252 pp. Ill. \$3.50.

The author does not believe Simon Girty was quite the blood-thirsty renegade his contemporaries would have us believe. That he was a cold-blooded roughneck cannot be denied, but it is not the author's purpose to attempt to excuse him. Going back to original sources, Mr. Boyd has made an dispassionate study of this white man who spent so many years among the Indians and who fought with Indians against white men and with the white men against Indians. He finds such good points as Girty possessed, and he finds that Girty was on a number of occasions an inactive, if not unwilling, participant in some of the butcheries committed by his red brethren.

The account is concerned chiefly with the period between Lord Dunmore's War and the battle of Fallen Timber, where Mad Anthony Wayne broke the power of the Shawanese, Miamis, Delawares, and Wyandots and cleared the Ohio country for white pioneers. During these years the whites were pressing more and more westward into the Indian country west of Pittsburgh, and Indian resentment at this invasion kept the whole frontier in a constant state of alarm. After the defeat of the Indians, Girty retired to his cabin not far from Malden, in Ontario, where he lived until his death in 1818, at seventy-seven years of age—one of the few human beings who had outlived his published obituary.

The author seeks to "explain" Siomn Girty. Perhaps he has done so. At any rate he has given us an interesting narrative of an unusual man and at the end, although not altogether convinced, we are willing to admit that Girty may not have been as bad as he was painted.

How to Talk. By John Mantle Clapp and Edwin A. Kane. The Ronald Press Co. 1928. 5¾"x 8½". 647 pp. \$5.00.

This is a text and reference book of such value that it is hoped it will not be confused with the highly advertised "How to out-orate Cicero or Wm. J. Bryan in ten lessons." It is a beautiful demonstration of how to talk itself, and would be of equally great benefit to class room or to individual without the assistance of instructors. Its chapters and paragraphs even are correctly and clearly titled and sub-titled. The index leaves nothing to be desired. Every phase of conversation, speech, and communication is analyzed; methods of correction are carefully outlined. By the use of its precepts, improvement of speech, whether it be story telling, business communication or address, will be possible.—J. J. V. P.

Morrow's Almanack for the Year of Our Lord 1929. Burton Rascoe, ed. New York: Wm. Morrow & Co. 1928. 5"x 8". 319 pp. Ill. \$2.50.

This book has no place in the bookcase or on the library shelves. It belongs on the library table or desk where it will be nearest at hand. There is nothing else like it, and the welcome it received last year will certainly become enthusiasm this year. Whatever the mood, there is something in the book to fit, and everything in the book will repay reading more than once. The title page indicates the scope:

As in the 1928 ALMANACK an UNIQUE & ENTERTAINING observatory of Men & Manners, the past, present, & future. WIT for the light minded & instructions for the serious. All as set down by the DISTINGUISHED WRITERS who have contributed to this *vol.* pieces *never before seen in print.* With Calendars, Forecasts, Prophecies for the Weather, the fashions, lunations, horoscopes, advice on Human Foibles, receipts, & Preventatives.

These "distinguished writers," number something like sixty "famous moderns," to say nothing of "many ancient Scholars and Poets." Among the list of contributors may be noted Achmed Abdullah, Richard Atwater, Ilse Bischoff, George M. Cohan, Padraic Colum, Ford Madox Ford, Louis Golding, Rupert Hughes, John Macy, Westbrook Pegler, Herb Roth, and Elliott White Springs. What more need be said? If they cannot amuse you, you are hopeless.

How to Write. By *Those Who Can.* Compiled by Robert Watson, F. R. G. S. Ottawa: The Graphic Publishers, Ltd. 1928. 4¼"x 6¼". 161 pp. \$1.00.

This little volume consists of some four hundred and ten short quotations from the works of authors, commentators, philosophers, and critics dealing with important phases of the art of literature. These are classified and so arranged that they lead naturally from the subject of making a beginning through the various phases of development to the artistic in literature. An index assists in ready reference.

The aspiring young author will find inspiration in the volume and the general reader will find pleasure in the quotations.

The Blue Gingham Cook Book. By Imogene B. Wolcott. New York: William Morrow and Company. 1928. 5½"x 8". 481 pp. Ill. \$2.75.

Army wives in these days spend much of their time doing their own cooking and are always grateful for any suggestions which will help keep the maount of work within reason

and which will vary the meals in a satisfactory manner. This volume does both. Mrs. Wolcott, in an endeavor to secure the best possible collection of American receipes, asked all the leading manufacturers of foodstuffs for their choicest receipes. These she tested in her own kitchen, and from them she selected those which were most satisfactory from the housewife's point of view—time, labor, and results. Her selections include 2981 receipes.

The book is arranged in a simple, logical manner and is fully indexed. Many novel receipes appear—as service of sausage on apricots or pineapple. A novelty in bookbinding is the waterproof oil-cloth cover with which the book is provided, enabling it to withstand the wear and tear of kitchen usage. A valuable book.

"These camps are a democracy of youth, without distinction of wealth, of dress, of opportunity, or of responsibility. They develop an understanding between the selected youthful representatives from all sections and from the many walks of life, and for our coming generation, will make our country a better place in which to live." Robert L. Bullard, Radio Address, April 21, 1923. War Department press release.